```
=> file reg
FILE 'REGISTRY' ENTERED AT 12:00:33 ON 05 JAN 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 American Chemical Society (ACS)

Property values tagged with IC are from the ZIC/VINITI data file
provided by InfoChem.

STRUCTURE FILE UPDATES:     4 JAN 2006  HIGHEST RN 871209-00-6
DICTIONARY FILE UPDATES:    4 JAN 2006  HIGHEST RN 871209-00-6

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JULY 14, 2005

  Please note that search-term pricing does apply when
  conducting SmartSELECT searches.

**********************************************************************
*                                                                    *
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,    *
* effective March 20, 2005.  A new display format, IDERL, is now     *
* available and contains the CA role and document type information. *
*                                                                    *
**********************************************************************

Structure search iteration limits have been increased.  See HELP SLIMITS
for details.

REGISTRY includes numerically searchable data for experimental and
predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/ONLINE/UG/regprops.html

=> file hcapl
FILE 'HCAPLUS' ENTERED AT 12:00:37 ON 05 JAN 2006
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2006 AMERICAN CHEMICAL SOCIETY (ACS)


Copyright of the articles to which records in this database refer is
held by the publishers listed in the PUBLISHER (PB) field (available
for records published or updated in Chemical Abstracts after December
26, 1996), unless otherwise indicated in the original publications.
The CA Lexicon is the copyrighted intellectual property of the
the American Chemical Society and is provided to assist you in searching
databases on STN.  Any dissemination, distribution, copying, or storing
of this information, without the prior written consent of CAS, is
strictly prohibited.

FILE COVERS 1907 - 5 Jan 2006  VOL 144 ISS 2
FILE LAST UPDATED: 4 Jan 2006  (20060104/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.
```

This file contains CAS Registry Numbers for easy and accurate substance identification.

193 compounds with these element

```
=> d que l25
L19          193 SEA FILE=REGISTRY ABB=ON  (LI(L)SI(L)(NB OR TA OR W)(L)O)/ELS
L24          118 SEA FILE=HCAPLUS ABB=ON  L19
L25           11 SEA FILE=HCAPLUS ABB=ON  L24 AND ELECTROLYT?
```

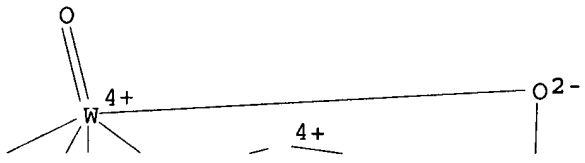
11 CA references with

```
=> d l25 1-11 bib abs ind hitstr
```

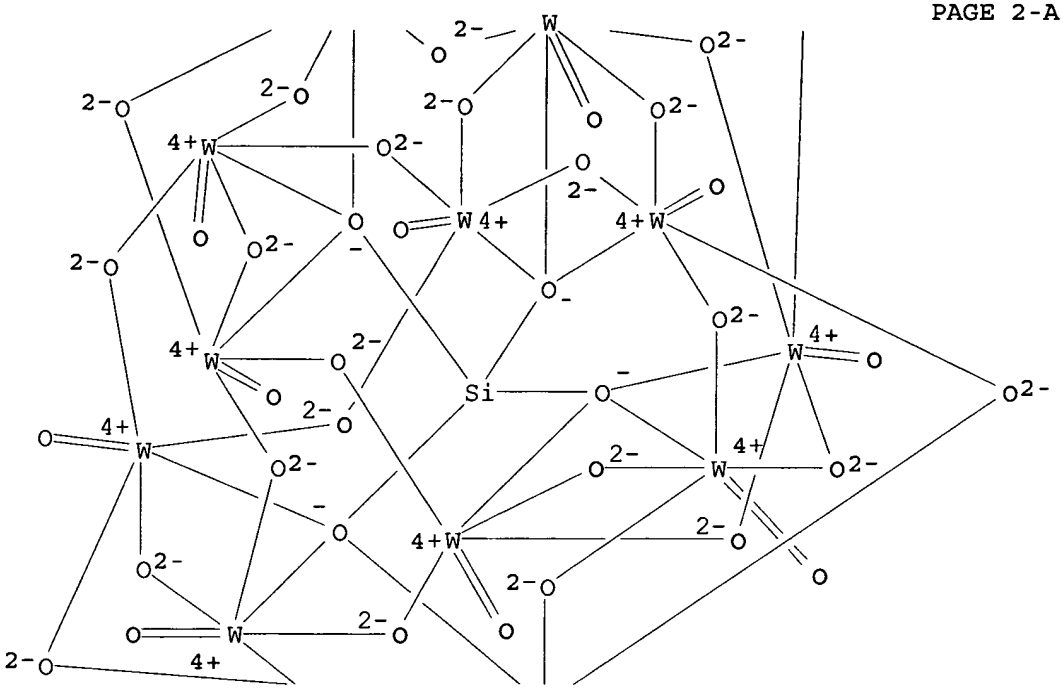
L25 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2005:103179 HCAPLUS
DN 143:462944
TI Application of silicotungstate lithium in polymer **electrolyte**
AU Li, Zhao-hui; Su, Guang-yao; Gao, De-shu; Wang, Xia-yu; Li, Xiao-ping
CS College of Chemistry, Xiangtan University, Xiangtan Hunan, 411105, Peop. Rep. China
SO Dianyuan Jishu (2004), 28(12), 743-747
CODEN: DIJIFT; ISSN: 1002-087X
PB Dianyuan Jishu Bianjibu
DT Journal
LA Chinese
AB The porous poly (vinylidenefluoride-co-hexafluoropropylene) [P(VDF-HFP)] membranes, which doped with various amts. of silicotungstate lithium (Li4SiW12O40), were prepared by liquid-liquid extraction in this paper. The polymer films possessed the ionic conductivity of 10-4 S·cm-1 after absorbing propylene carbonate (PC). From the results of DSC anal. for polymer films, it was found that the crystallinity of them decreased with the increase of amount of Li4SiW12O40 doping polymer matrixes. The ionic conductivity of polymer **electrolytes** equaled 3.56 + 10-4 S·cm-1 when the mass fraction of silicotungstate lithium was 8.5% in polymer film. The lithium ions transference number, which was measured by the method of combination of AC impedance with DC polarization, decreased with increase of the mass fraction of Li4SiW12O40 in the porous polymer film. There are hydrogen bonds and coordination between silicotungstate lithium and P(VDF-HFP)'s mol. chains from the anal. of FTIR spectrum for polymer film.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35, 49
ST lithium silicotungstate polymer **electrolyte**
IT Ionic conductivity
Polymer **electrolytes**
(application of lithium silicotungstate in polymer **electrolyte**)
IT Heteropoly acids
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(salts; application of lithium silicotungstate in polymer **electrolyte**)
IT 108-32-7, Propylene carbonate 9011-17-0 **84259-22-3**, Lithium tungstosilicate (Li4SiW12O40)
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(application of lithium silicotungstate in polymer **electrolyte**)
IT **84259-22-3**, Lithium tungstosilicate (Li4SiW12O40)
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(application of lithium silicotungstate in polymer **electrolyte**

)
RN 84259-22-3 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetralithium
(9CI) (CA INDEX NAME)

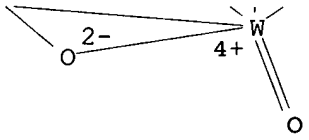
PAGE 1-A



PAGE 2-A



PAGE 3-A



●4 Li+

L25 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:632469 HCAPLUS
DN 141:176832
TI Nonaqueous **electrolyte** lithium ion secondary battery containing lithium-based composite metal oxide for improved discharge capacity and thermal stability
IN Kubo, Koichi
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004220801	A2	20040805	JP 2003-3291	20030109

PRAI JP 2003-3291 20030109

AB Disclosed is the nonaq. **electrolyte** lithium ion secondary battery comprising (a) a pos. electrode containing a metal oxide Li2-xM1-yM'yXzAO4 (M = Ti, Nb, etc.; M' = V, Cr, Mn, etc.; X = O, F; A = Si, Ge, P, S; 0≤x≤2; 0≤y≤0.5; and 0.5≤z≤1.5) having the tetragonal crystal structure, (b) a neg. electrode, and (c) a nonaq. **electrolyte.**

IC ICM H01M004-58
ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq **electrolyte** lithium ion secondary battery; metal oxide composite lithium

IT Secondary batteries
(lithium; pos. electrode of nonaq. **electrolyte** lithium ion secondary battery)

IT Battery electrodes
(pos. electrode of nonaq. **electrolyte** lithium ion secondary battery)

IT 530740-14-8, Molybdenum oxide phosphate (Mo2O3(PO4)2) 732298-51-0, Lithium molybdenum oxide phosphate (Li2MoO(PO4)) 732298-52-1, Lithium niobium oxide phosphate (Li2NbO(PO4)) 732298-53-2, Lithium tantalum oxide phosphate (Li2TaO(PO4)) 732298-54-3, Lithium tungsten oxide phosphate (Li2WO(PO4)) 732298-55-4, Iron lithium molybdenum oxide phosphate (Fe0.33Li2Mo0.67O(PO4)) 732298-56-5, Germanium lithium molybdenum oxide (GeLi2MoO5) 732298-58-7 732298-59-8, Iron lithium tantalum fluoride phosphate (Fe0.5Li2Ta0.5F(PO4)) 732298-60-1 732298-61-2 732298-62-3 732298-63-4, Lithium titanium oxide sulfate (Li2TiO(SO4)) 732298-64-5, Lithium titanium vanadium oxide sulfate (Li2Ti0.5V0.5O(SO4)) 732298-65-6, Lithium niobium vanadium oxide sulfate (Li2Nb0.5V0.5O(SO4)) 732298-66-7, Lithium molybdenum oxide phosphate (Li2MoO1.5(PO4)) 732298-67-8, Lithium titanium oxide phosphate (Li2TiO0.5(PO4)) **732298-68-9**, Lithium tungsten oxide silicate (Li2WO(SiO4))
RL: DEV (Device component use); USES (Uses)
(pos. electrode of nonaq. **electrolyte** lithium ion secondary battery)

IT **732298-68-9**, Lithium tungsten oxide silicate (Li2WO(SiO4))
RL: DEV (Device component use); USES (Uses)
(pos. electrode of nonaq. **electrolyte** lithium ion secondary battery)

RN 732298-68-9 HCAPLUS

CN Lithium tungsten oxide silicate (Li2WO(SiO4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1	17778-80-2
O4Si	1	17181-37-2
W	1	7440-33-7
Li	2	7439-93-2

L25 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2004:430509 HCAPLUS

DN 140:426100

TI Solid **electrolyte** for battery

IN Park, Young-sin; Lee, Seok-soo; Jin, Young-gu

PA Samsung Electronics Co., Ltd., S. Korea

SO U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO

applicant

DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2004101761	A1	20040527	US 2003-656180	20030908
EP 1427042	A1	20040609	EP 2003-255187	20030821
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
JP 2004179161	A2	20040624	JP 2003-387552	20031118
PRAI KR 2002-74362	A	20021127		

AB A solid **electrolyte**, a method of manufacturing the same, and a lithium battery and a thin-film battery that employ the solid **electrolyte** are provided. The solid **electrolyte** contains nitrogen to enhance the ionic conductivity and electrochem. stability of batteries.

IC ICM H01M006-18
ICS C04B035-00
INCL 429322000; 501096100; 501096500
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery solid **electrolyte**
IT Vapor deposition process
(chemical; solid **electrolyte** for battery)
IT Electron beams
(deposition by; solid **electrolyte** for battery)
IT Ion beams
(deposition ny; solid **electrolyte** for battery)
IT Secondary batteries
(lithium; solid **electrolyte** for battery)
IT Battery **electrolytes**
Sputtering
(solid **electrolyte** for battery)
IT 1313-96-8, Niobium oxide (Nb2O5) 1314-35-8, Tungsten oxide (WO3), processes 1314-61-0, Tantalum oxide (Ta2O5) 7631-86-9, Silica, processes 10377-52-3 12057-24-8, Lithium oxide (Li2O), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(solid **electrolyte** for battery)
IT **691009-59-3P**, Lithium niobium oxide silicate (Li0.32Nb0.32O0.29(SiO3)0.67) **691009-60-6P**, Lithium niobium oxide silicate (Li1.16Nb0.58O1.77(SiO4)0.13) **691009-62-8P**, Lithium niobium oxide silicate (Li1.16Nb0.26O0.65(SiO4)0.29) **691009-64-0P**, Lithium niobium oxide silicate (Li1.34Nb0.32O1.15(SiO4)0.16) **691009-66-2P**, Lithium niobium oxide silicate (Li1.3Nb0.1O0.3(SiO4)0.3) **691009-68-4P**, Lithium niobium oxide silicate (Li1.4Nb0.2O0.8(SiO4)0.2) **691009-70-8P**, Lithium niobium oxide silicate (Li1.4Nb0.1O0.45(SiO4)0.25) 691009-72-0P, Lithium oxide phosphate silicate (Li1.55O0.2(PO4)0.05(SiO4)0.25)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(solid **electrolyte** for battery)
IT 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(solid **electrolyte** for battery)
IT **691009-59-3P**, Lithium niobium oxide silicate (Li0.32Nb0.32O0.29(SiO3)0.67) **691009-60-6P**, Lithium niobium oxide silicate (Li1.16Nb0.58O1.77(SiO4)0.13) **691009-62-8P**, Lithium niobium oxide silicate (Li1.16Nb0.26O0.65(SiO4)0.29) **691009-64-0P**, Lithium niobium oxide silicate (Li1.34Nb0.32O1.15(SiO4)0.16) **691009-66-2P**, Lithium niobium

oxide silicate (Li1.3Nb0.1O0.3(SiO4)0.3) **691009-68-4P**, Lithium niobium oxide silicate (Li1.4Nb0.2O0.8(SiO4)0.2) **691009-70-8P**, Lithium niobium oxide silicate (Li1.4Nb0.1O0.45(SiO4)0.25)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(solid **electrolyte** for battery)

RN 691009-59-3 HCAPLUS
CN Lithium niobium oxide silicate (Li0.32Nb0.32O0.29(SiO3)0.67) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.29	17778-80-2
O3Si	0.67	15593-90-5
Nb	0.32	7440-03-1
Li	0.32	7439-93-2

RN 691009-60-6 HCAPLUS
CN Lithium niobium oxide silicate (Li1.16Nb0.58O1.77(SiO4)0.13) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.77	17778-80-2
O4Si	0.13	17181-37-2
Nb	0.58	7440-03-1
Li	1.16	7439-93-2

RN 691009-62-8 HCAPLUS
CN Lithium niobium oxide silicate (Li1.16Nb0.26O0.65(SiO4)0.29) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.65	17778-80-2
O4Si	0.29	17181-37-2
Nb	0.26	7440-03-1
Li	1.16	7439-93-2

RN 691009-64-0 HCAPLUS
CN Lithium niobium oxide silicate (Li1.34Nb0.32O1.15(SiO4)0.16) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.15	17778-80-2
O4Si	0.16	17181-37-2
Nb	0.32	7440-03-1
Li	1.34	7439-93-2

RN 691009-66-2 HCAPLUS
CN Lithium niobium oxide silicate (Li1.3Nb0.1O0.3(SiO4)0.3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

O	0.3	17778-80-2
O4Si	0.3	17181-37-2
Nb	0.1	7440-03-1
Li	1.3	7439-93-2

RN 691009-68-4 HCAPLUS
CN Lithium niobium oxide silicate (Li1.4Nb0.2O0.8(SiO4)0.2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.8	17778-80-2
O4Si	0.2	17181-37-2
Nb	0.2	7440-03-1
Li	1.4	7439-93-2

RN 691009-70-8 HCAPLUS
CN Lithium niobium oxide silicate (Li1.4Nb0.1O0.45(SiO4)0.25) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0.45	17778-80-2
O4Si	0.25	17181-37-2
Nb	0.1	7440-03-1
Li	1.4	7439-93-2

L25 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:143909 HCAPLUS
DN 140:425989
TI Syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery
AU Chen, Ya-guang; Wang, Cun-guo; Zhang, Xi-yan; Xie, De-min; Wang, Rong-shun
CS Faculty of Chemistry, Northeast Normal University, Changchun, 130024, Peop. Rep. China
SO Chemical Research in Chinese Universities (2004), 20(1), 77-80
CODEN: CRCUED; ISSN: 1005-9040
PB Higher Education Press
DT Journal
LA English
AB The all-lithium salts of heteropoly acid LixXM12O40 (HPA-Li) (X=P, Si; M=Mo, W) were obtained via ion exchange and characterized by means of IR and UV spectroscopies, TG and elemental analyses. The conductivity of the **electrolytic** solution consisting of Li3PW12O40 and PC/DME mixing solvent (1/2.5, volume ration) is up to 7.2+10-2 S/cm, being higher than that of LiClO4 as the **electrolyte.** The all-lithium salts were used as **electrolytes** in secondary lithium-ion batteries. The discharge capacity of the PAS/Li batteries with Li3PW12O40 **electrolyte** solns. reaches to 148 (mA · h)/g and the cyclic life is up to 380 times; much better than those of commercialized products with LiClO4 and LiAsF6 as **electrolytes.**
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 73, 76, 78
ST lithium salt heteropolyacid **electrolyte** secondary battery
IT Heteropoly acids
RL: NUU (Other use, unclassified); USES (Uses)

(lithium salts; syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT Secondary batteries
(lithium; syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT IR spectra
UV and visible spectra
(of all-lithium salts of heteropolyacid)

IT Electric conductivity
(of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT Electric capacitance
(of lithium-ion battery with of all-lithium salts of heteropolyacid as **electrolyte** with PC/DME)

IT **Electrolytes**
(syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT Ion exchange
(syntheses of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery, by)

IT Heteropoly acids
RL: NUU (Other use, unclassified); USES (Uses)
(tungstophosphoric, lithium salts; syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT Heteropoly acids
RL: NUU (Other use, unclassified); USES (Uses)
(tungstosilicic, lithium salts; syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT 692729-67-2P
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); PROC (Process); USES (Uses)
(all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery, by)

IT 108-32-7, Propylene carbonate 110-71-4
RL: NUU (Other use, unclassified); USES (Uses)
(elec. capacitance of lithium-ion battery with of all-lithium salts of heteropolyacid as **electrolyte** with PC/DME)

IT 11104-88-4, Molybdophosphoric acid 11104-89-5, Molybdosilicic acid
RL: NUU (Other use, unclassified); USES (Uses)
(lithium salts; syntheses and application of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

IT **692729-69-4P** 692729-71-8P 692729-72-9P
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); PROC (Process); USES (Uses)
(of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

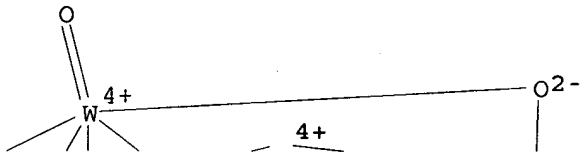
IT **692729-69-4P**
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); PROC (Process); USES (Uses)
(of all-lithium salts of heteropolyacid as **electrolyte** of lithium-ion battery)

RN 692729-69-4 HCAPLUS

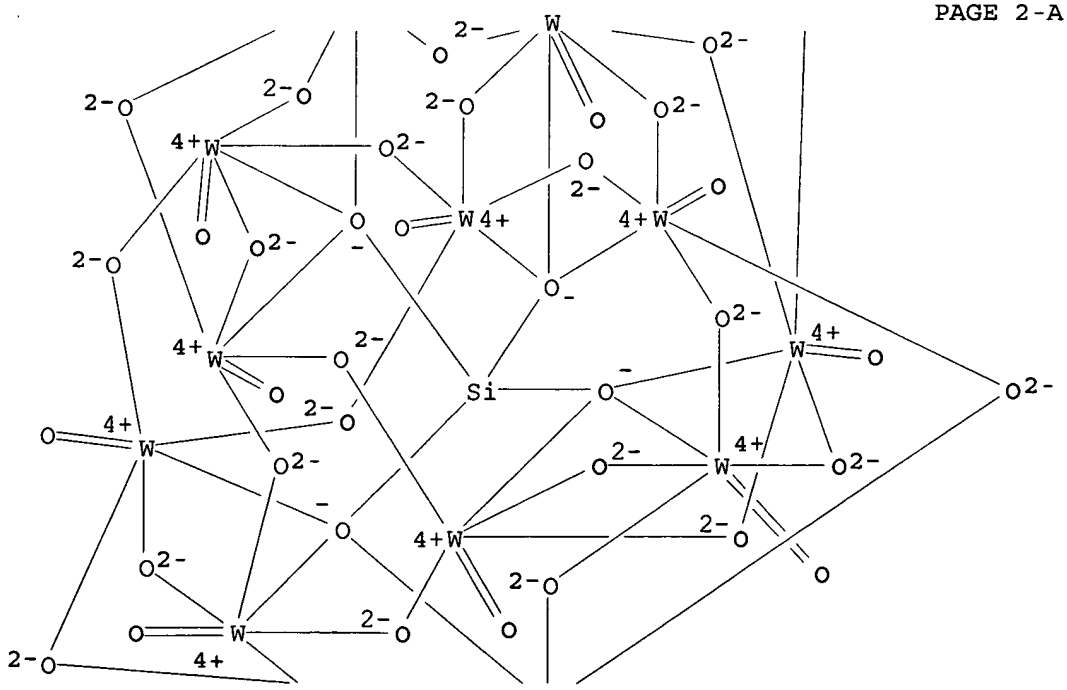
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetralithium,

tridecahydrate (9CI) (CA INDEX NAME)

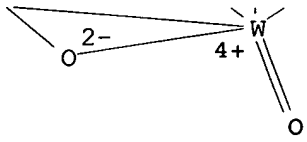
PAGE 1-A



PAGE 2-A



PAGE 3-A



●4 Li^+

●13 H_2O

RE.CNT 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:413431 HCAPLUS
DN 139:136001
TI Lithium salts of heteropolyacid as the **electrolyte** of lithium-ion battery
AU Chen, Ya-Guang; Wang, Cun-Guo; Zhang, Xi-Yan; Xie, De-Ming; Wang, Rong-Shun
CS Faculty of Chemistry, Northeast Normal University, Changchun, 130024, Peop. Rep. China
SO Synthetic Metals (2003), 135-136, 225-226
CODEN: SYMEDZ; ISSN: 0379-6779
PB Elsevier Science B.V.
DT Journal
LA English
AB The lithium salts of heteropoly acids were prepared by ion-exchange method and characterized by IR and UV spectra and TG method. They were used as **electrolyte** of lithium-ion batteries. The discharge capacity and the cycle life of the batteries with Li3PW12O40.nH2O and Li4SiW12O40.nH2O **electrolytes** were obviously improved in comparison with that of battery with LiClO4 **electrolyte.** The battery with Li3PW12O40 **electrolyte** has a stronger ability of maintaining its electricity capacity.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium heteropolyacid salt **electrolyte** ion secondary battery discharge capacity
IT Polyacenes
RL: DEV (Device component use); USES (Uses)
(PAS electrode composite with carbon black and PTFE; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)
IT Carbon black, uses
RL: DEV (Device component use); USES (Uses)
(PAS- electrode composite with PTFE and polyacene; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)

(PAS- electrode composite with carbon black and polyacene; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT Battery electrodes
Battery **electrolytes**
Electric current-potential relationship
IR spectra
UV and visible spectra
(lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT Secondary batteries
(lithium; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT Electric conductivity
(of PC/DME/heteropolyacid solns.; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT Heteropoly acids
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(salts, lithium and potassium salts; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT 9002-84-0, PTFE
RL: DEV (Device component use); USES (Uses)
(PAS- electrode composite with carbon black and polyacene; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT 12363-31-4D, lithium salts, hydrated 12379-13-4D, lithium salts, hydrated 12534-77-9D, lithium salts, hydrated 29935-35-1 50927-64-5D, lithium salts, hydrated
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**electrolyte** in PC/DME solution; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT 7791-03-9
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**electrolyte** solution in PC/DME; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT 108-32-7, Propylene carbonate 115-10-6, Dimethyl ether
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solvent; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); USES (Uses)
(foil electrode; lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT **86692-11-7P** 99582-24-8P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

IT 12027-46-2P 12207-66-8P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

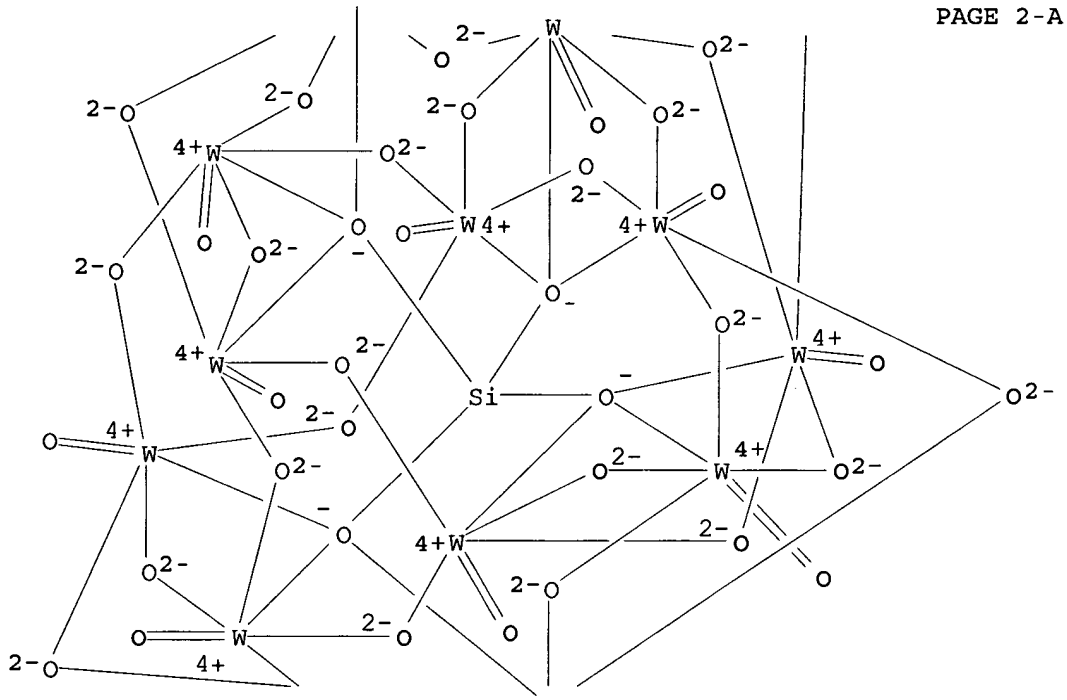
IT **86692-11-7P**
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(lithium salts of heteropolyacid as **electrolyte** of lithium-ion secondary battery)

RN 86692-11-7 HCAPLUS

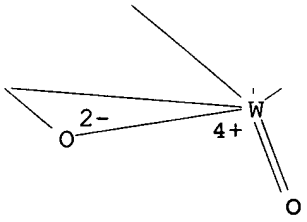
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetralithium,
hydrate (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A



PAGE 3-A



●4 Li+

●x H_2O

RE.CNT 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:97870 HCAPLUS
DN 138:156342
TI Cationic conductive material for energy storage devices
IN Huang, Yuhong; Wei, Qiang; Zheng, Haixing
PA USA
SO U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

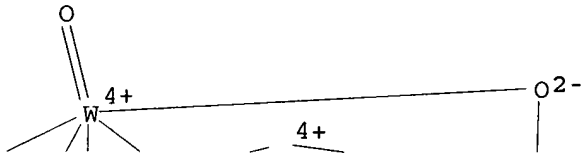
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003027052	A1	20030206	US 2001-917503	20010727
PRAI	US 2001-917503		20010727		

AB An **electrolyte** comprising a cationic species disposed in a polyoxometalate network. A composition comprising cationic species and polyoxometalate anionic species, wherein the polyoxometalate anionic species are coupled through a network of bridge ligands. An apparatus comprising a 1st electrode and a 2nd electrode; a current collector coupled to one of the 1st and the 2nd electrode; and an **electrolyte** disposed between the 1st electrode and the 2nd electrode, the **electrolyte** comprising a cationic species disposed in a polyoxometalate network.

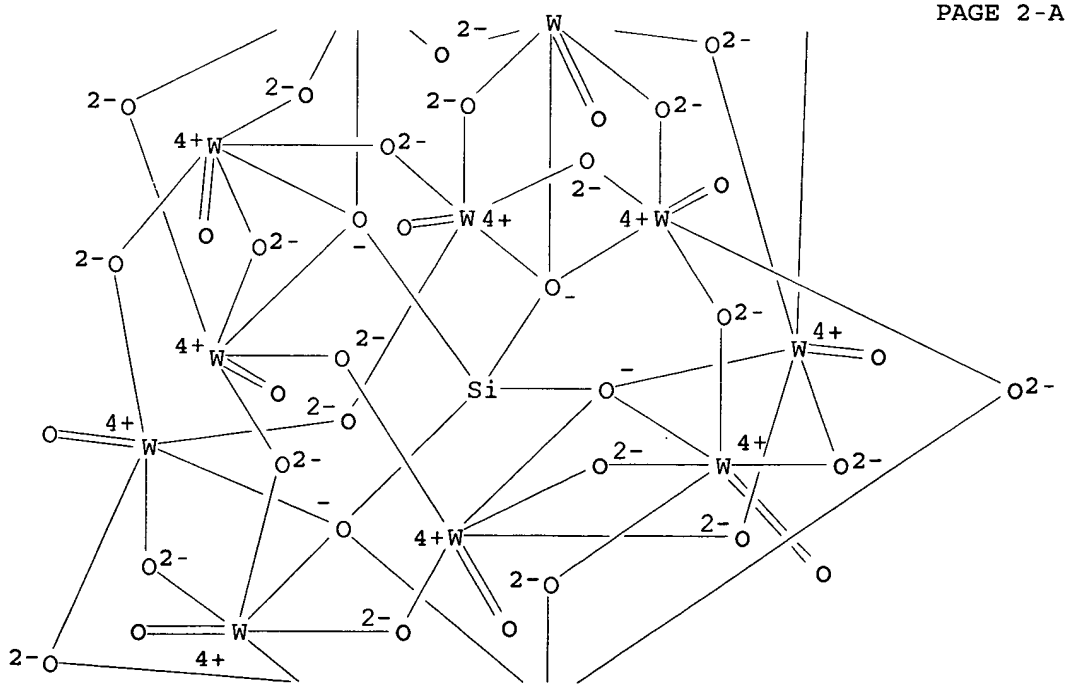
IC ICM H01M010-36
INCL 429304000; 429322000; 252062200
CC 52-3 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57, 76, 78
ST cation conductor energy storage device polyoxometallate
IT Oxides (inorganic), uses
Polysiloxanes, uses
Polyurethanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(cationic conductive material for energy storage devices)
IT Energy storage
(devices; cationic conductive material for energy storage devices)
IT Electrodes
(energy storage devices; cationic conductive material for energy storage devices)
IT Metal alkoxides
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxymetallate derivs.; cationic conductive material for energy storage devices)
IT Heteropoly acids
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(salts; cationic conductive material for energy storage devices)
IT 7631-86-9D, Silica, polyoxymetallate derivs. 12408-02-5, Hydrogen ion, uses 14798-03-9, Ammonium, uses 17341-24-1, Lithium(1+), uses
RL: TEM (Technical or engineered material use); USES (Uses)
(cationic conductive material for energy storage devices)
IT 12026-95-8 82691-60-9 83084-35-9 **84259-22-3**
93279-92-6 379686-96-1 379686-97-2
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(ionic conductivity of)

IT 9003-53-6, Polystyrene
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxymetallate derivs.; cationic conductive material for energy storage devices)
IT 12390-22-6P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reactions in preparation of conductor **electrolytes**)
IT 12027-38-2
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of **electrolyte** from)
IT 495406-46-7P
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(preparation of **electrolyte** from)
IT 78-10-4, Tetraethoxysilane 1310-65-2, Lithium hydroxide (LiOH)
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(reactions in preparation of conductor **electrolytes**)
IT 123-61-5 1643-19-2, Tetrabutylammonium bromide 7631-95-0, Sodium molybdate (Na2MoO4)
RL: RCT (Reactant); RACT (Reactant or reagent)
(reactions in preparation of conductor **electrolytes**)
IT **84259-22-3 93279-92-6**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(ionic conductivity of)
RN 84259-22-3 HCAPLUS
CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kappa.O':κO':κO':κO'':κO'':κO'':κO''':.kappa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetralithium (9CI) (CA INDEX NAME)

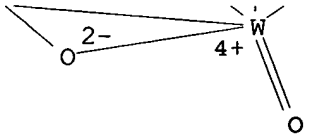
PAGE 1-A



PAGE 2-A



PAGE 3-A

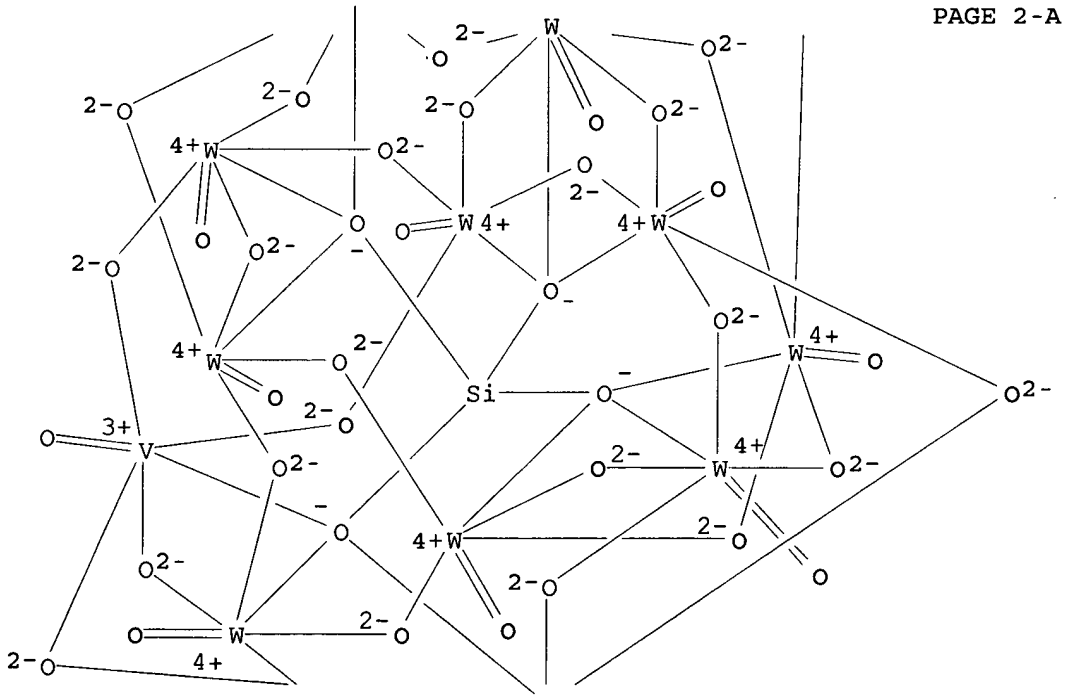


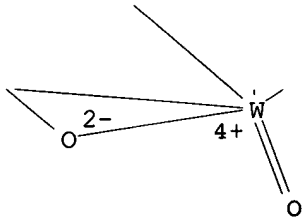
●4 Li+

RN 93279-92-6 HCAPLUS
CN Vanadate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-μ-oxooxo-, pentalithium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





PAGE 3-A

●5 Li+

L25 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:916776 HCAPLUS
DN 138:323871
TI A novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary batteries
AU Wang, Xiuli; Wang, Enbo; Xie, Demin; Zhang, Xiyan; Hu, Changwen; Xu, Lin
CS Institute of Polyoxometalate Chemistry, Department of Chemistry, Northeast Normal University, Changchun, 130024, Peop. Rep. China
SO Solid State Ionics (2003), 156(1,2), 71-78
CODEN: SSIOD3; ISSN: 0167-2738
PB Elsevier Science B.V.
DT Journal
LA English
AB Mixed-valence Keggin-type lithium polyoxometalates (POMs) were used as the **electrolytes** of polyacenic semiconductor (PAS) secondary batteries substituting for LiClO4 for the first time. The discharging, cycle and self-discharging properties of these PAS/Li secondary batteries and the effect of c.d. and temperature on the properties of the batteries have been investigated. The results indicate not only that the lithium POMs can overcome the disadvantages of LiClO4, which is apt to explode when heated or rammed, but also that some of the PAS/Li secondary batteries assembled with the novel **electrolytes** have larger capacity and smaller self-discharging than that assembled with LiClO4. Therefore, it is believed that Keggin-type mixed-valence lithium POMs are novel and better **electrolytes** of PAS secondary batteries and exhibit promising practical application.
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium tungsten oxide phosphate **electrolyte** lithium battery; silicate lithium tungsten oxide **electrolyte** lithium batteries; molybdenum lithium oxide phosphate silicate **electrolyte** lithium batteries
IT Secondary batteries
(lithium; novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary batteries)
IT Battery **electrolytes**
(novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary batteries)
IT Heteropoly acids
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary

batteries)

IT 514202-37-0 **514202-38-1** 514202-49-4
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**electrolytes**; novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary batteries)

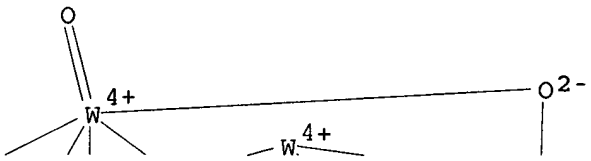
IT 514202-39-2, Lithium molybdenum oxide phosphate (Li5Mo12O36(PO4))
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary batteries)

IT **514202-38-1**
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(**electrolytes**; novel application of mixed-valence Keggin-type polyoxometalates as non-aqueous **electrolytes** in polyacenic semiconductor secondary batteries)

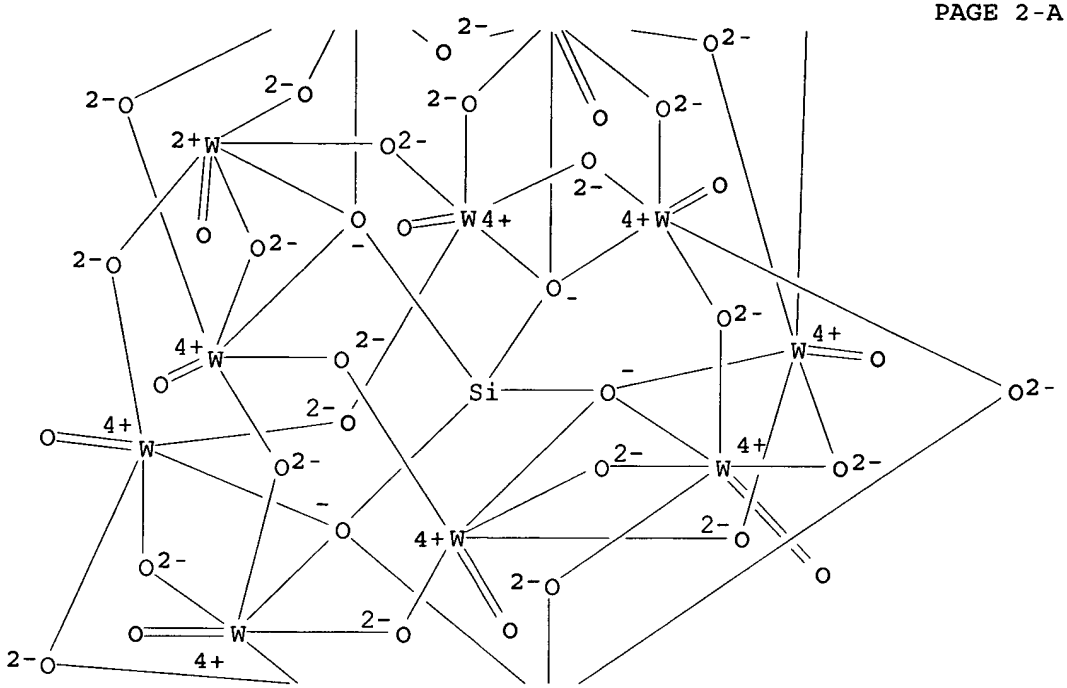
RN 514202-38-1 HCAPLUS

CN Tungstate(6-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, hexalithium (9CI)
(CA INDEX NAME)

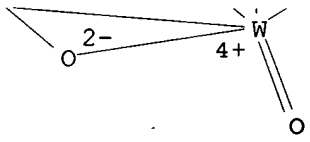
PAGE 1-A



PAGE 2-A



PAGE 3-A



●6 Li+

RE.CNT 30 THERE ARE 30 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:671907 HCAPLUS
DN 136:40116
TI Solid **electrolyte** for thin film energy storage devices
AU Huang, Yuhong; Jiang, Gengwei; West, William; Hill, Craig
CS Chemat Technology, Inc., Northridge, CA, 91324, USA
SO Proceedings of the Intersociety Energy Conversion Engineering Conference (2001), 36th(Vol. 2), 887-889
CODEN: PIECDE; ISSN: 0146-955X
PB Society of Automotive Engineers
DT Journal
LA English
AB There is a need for the development of solid-state micro power sources with both high power and high energy d. as a new type of power supply for

advanced consumer electronics, MEMS, sensors, computer equipment and communication systems. To satisfy the requirements of a compact and lightwt. power supply, thin film batteries are under consideration as candidates for the hybrid power sources. A novel solid **electrolyte** based on polyoxometalates has been studied for thin film energy storage devices. This class of nano-cluster materials show considerable potential in both proton and lithium ion solid **electrolyte** conductive coatings. A spin-on thin film deposition process was developed in this research.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST solid **electrolyte** polyoxometalate film lithium battery

IT Heteropoly acids
RL: DEV (Device component use); USES (Uses)
(lithium salts; solid **electrolyte** for thin film energy storage devices)

IT Ionic conductivity
(solid **electrolyte** for thin film energy storage devices)

IT Battery **electrolytes**
(solid; solid **electrolyte** for thin film energy storage devices)

IT Coating process
(spin; solid **electrolyte** for thin film energy storage devices)

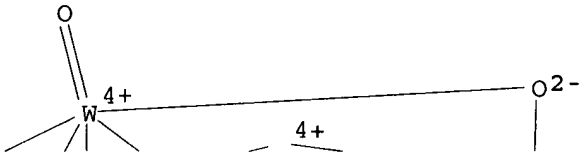
IT 12026-95-8, Lithium tungstophosphate li3pw12o40 82691-60-9 83084-35-9
84259-22-3, Lithium tungstosilicate li4siw12o40 **93279-92-6**
138597-47-4 379686-96-1 379686-97-2
RL: DEV (Device component use); USES (Uses)
(solid **electrolyte** for thin film energy storage devices)

IT **84259-22-3**, Lithium tungstosilicate li4siw12o40 **93279-92-6**
RL: DEV (Device component use); USES (Uses)
(solid **electrolyte** for thin film energy storage devices)

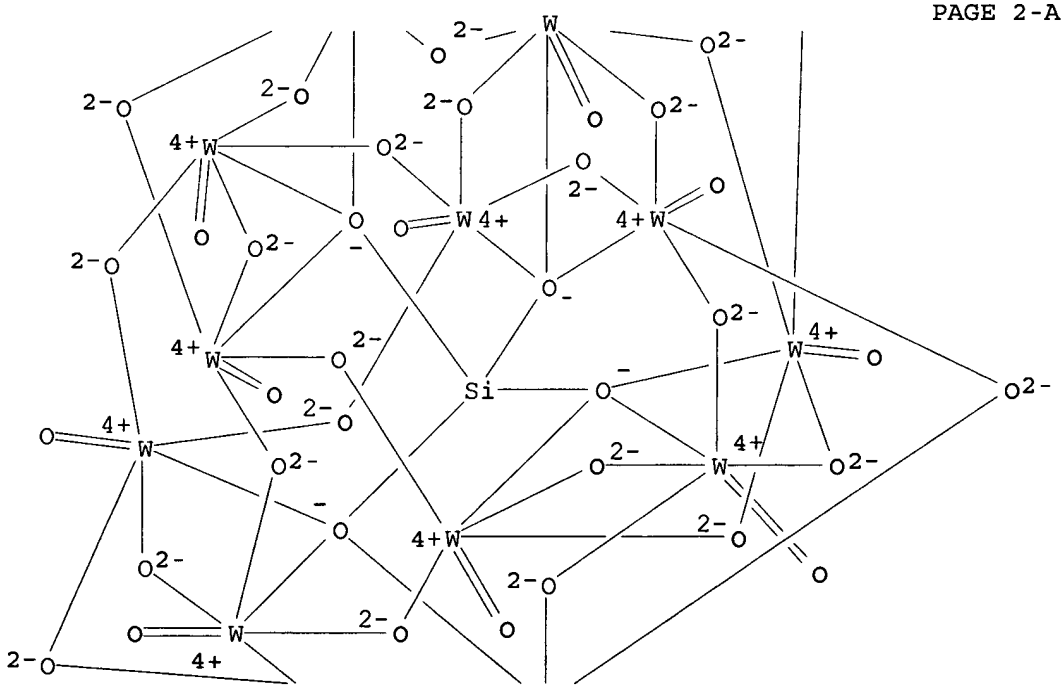
RN 84259-22-3 HCAPLUS

CN Tungstate(4-), [μ12-[orthosilicato(4-)-κO:κO:κO:.kapp
a.O':κO':κO':κO'':κO'':κO'':κO''':.kap
pa.O''':κO''']]tetracosa-μ-oxododecaoxododeca-, tetralithium
(9CI) (CA INDEX NAME)

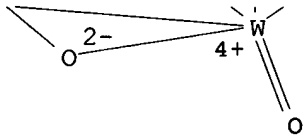
PAGE 1-A



PAGE 2-A



PAGE 3-A

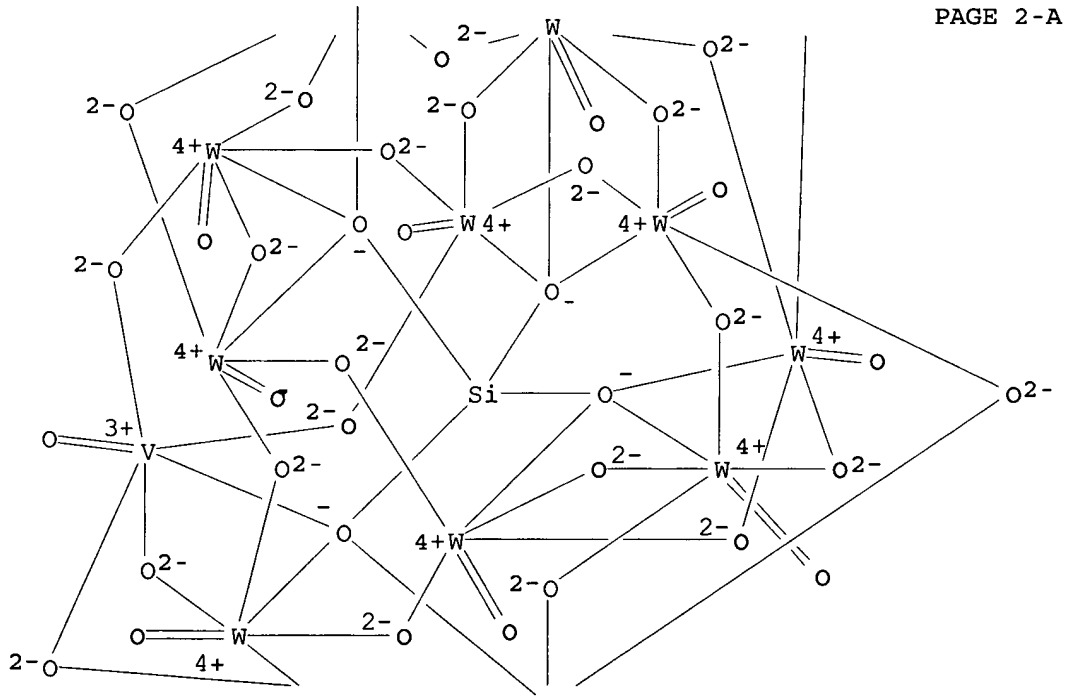


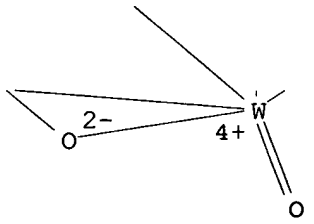
●4 Li+

RN 93279-92-6 HCAPLUS
CN Vanadate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-μ-oxooxo-, pentalithium (9CI) (CA INDEX NAME)

* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

PAGE 2-A





PAGE 3-A

●5 Li+

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2000:196425 HCAPLUS
DN 132:285378
TI Role of Cation Size in the Energy of Electron Transfer to 1:1 Polyoxometalate Ion Pairs {(M+)(Xn+VW11O40)}(8-n)- (M = Li, Na, K)
AU Grigoriev, Vladimir A.; Hill, Craig L.; Weinstock, Ira A.
CS Department of Chemistry, Emory University, Atlanta, GA, 30322, USA
SO Journal of the American Chemical Society (2000), 122(14), 3544-3545
CODEN: JACSAT; ISSN: 0002-7863
PB American Chemical Society
DT Journal
LA English
AB By carefully controlling polyoxometalates (POM) size, structure and charge, temperature, buffer and **electrolyte** composition, and concentration as series of 1:1 association complexes were prepared between alkali metal cations (Li+, Na+, and K+) and three representative vanadium(V)-substituted α-Keggin heteropolytungstates α-(Xn+VW11O40)(9-n)- (X = P(V), Si(IV), and Al(III)). Formal 1e- reduction potentials are assigned. to specific 1:1 ion pairs.
CC 72-2 (Electrochemistry)
Section cross-reference(s): 67, 68, 78
ST cation size role energy electron transfer polyoxometalate ion pair; tungstovanadophosphate alkali metal ion pair formation redn potential; tungstovanadosilicate alkali metal ion pair formation redn potential; tungstovanadoaluminate alkali metal ion pair formation redn potential; alkali metal tungstovanadophosphate tungstovanadosilicate tungstovanadoaluminate ion pairing redn potential
IT Alkali metals, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(ions; role of size in energy of electron transfer to 1:1 polyoxometalate ion pairs)
IT Diffusion
Reduction potential
(of alkali metal tungstovanadoaluminate or tungstovanadophosphate or tungstovanadosilicate ion pairs in aqueous tert-Bu alc.)
IT Electron transfer
Energy
Ion pairs
(role of cation size in energy of electron transfer to 1:1 polyoxometalate ion pairs {(M+)(Xn+VW11O40)}(8-n)- (M = Li, Na, K))
IT Heteropoly acids

RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(tungstovanadoaluminates and tungstovanadosilicates; formation and effective hydrodynamic radii and reduction potential of alkali metal ion pairs)

IT Heteropoly acids
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(tungstovanadophosphates; formation and effective hydrodynamic radii and reduction potential of alkali metal ion pairs)

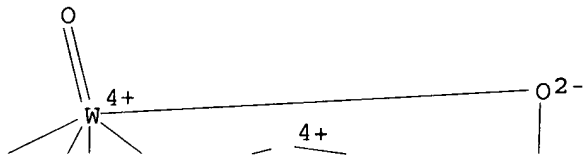
IT 263756-24-7 263756-26-9 263756-28-1 **263756-29-2**
263756-31-6 263756-33-8 263756-35-0 263756-37-2 263756-39-4
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(formation and effective hydrodynamic radii and reduction potential in aqueous tert-Bu alc.: role of cation size in energy of electron transfer to 1:1 polyoxometalate ion pairs)

IT 17341-24-1, properties 17341-25-2, Sodium ion, properties 24203-36-9, Potassium ion, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(role of cation size in energy of electron transfer to 1:1 polyoxometalate ion pairs {(M+)(Xn+VW11O40)}(8-n)- (M = Li, Na, K))

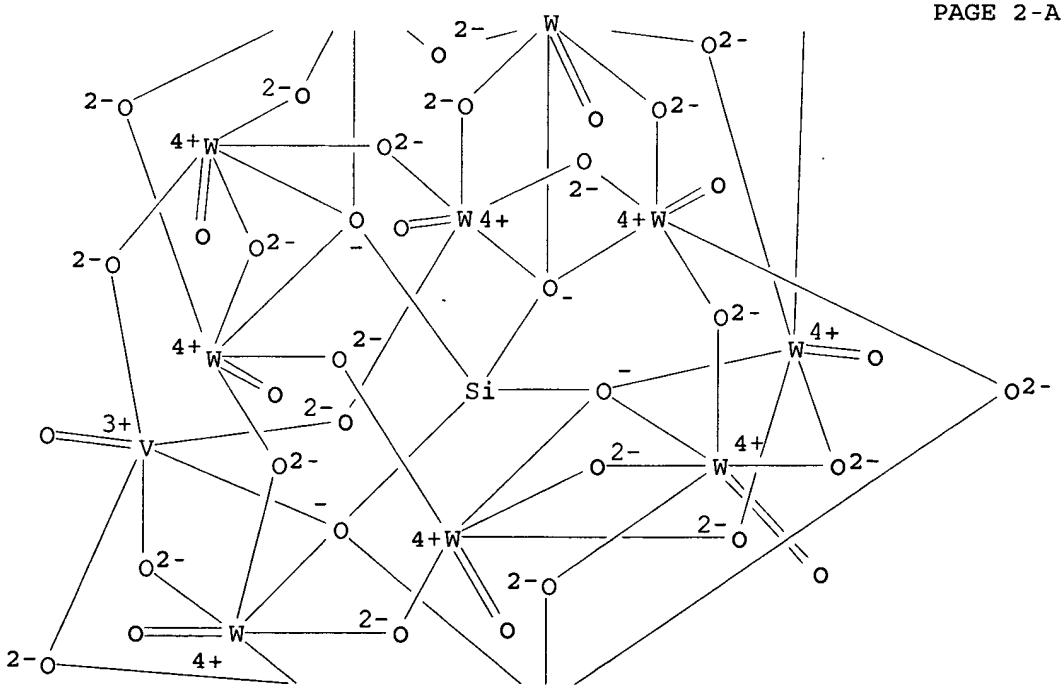
IT **263756-29-2**
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); PROC (Process); RACT (Reactant or reagent)
(formation and effective hydrodynamic radii and reduction potential in aqueous tert-Bu alc.: role of cation size in energy of electron transfer to 1:1 polyoxometalate ion pairs)

RN 263756-29-2 HCAPLUS
CN Vanadate(5-), (eicosa-μ-oxoundecaoxoundecatungstate)[μ12-[orthosilicato(4-)-κO:κO:κO:κO':κO':κO':κO'':κO'':κO'':κO'':κO''':κO''':κO''']]tetra-μ-oxooxo-, monolithium (9CI) (CA INDEX NAME)

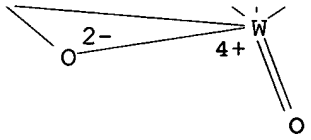
PAGE 1-A



PAGE 2-A



PAGE 3-A



● Li+

RE.CNT 38 THERE ARE 38 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1994:659663 HCAPLUS
DN 121:259663
TI Secondary nonaqueous-**electrolyte** battery and its manufacture
IN Iwasaki, Fumiharu; Yahagi, Seiji; Sakata, Akifumi; Chinone, Kazuo; Ishikawa, Hideki; Sakai, Tsugio; Tahara, Kensuke
PA Seiko Instruments Inc., Japan; Seiko Electronic Components Ltd.
SO Eur. Pat. Appl., 22 pp.
CODEN: EPXXDW
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 615296	A1	19940914	EP 1994-301699	19940310
	EP 615296	B1	19980128		
	R: DE, FR, GB				
	JP 07230800	A2	19950829	JP 1994-6023	19940124
	JP 3010226	B2	20000221		
	JP 2000077075	A2	20000314	JP 1999-270950	19940124
	JP 2000082459	A2	20000321	JP 1999-270949	19940124
	US 5506075	A	19960409	US 1994-205948	19940303
PRAI	JP 1993-49716	A	19930310		
	JP 1993-80944	A	19930407		
	JP 1993-83682	A	19930409		
	JP 1993-328379	A	19931224		
	JP 1994-6023	A	19940124		

AB The battery comprises ≥1 anode, a cathode, and a nonaq. **electrolyte** with Li ion conductivity, wherein a composite oxide LixSi1-yMyOz is used as an active material of the anode, where M represents ≥1 oxide-forming element other than alkali metals and Si (e.g., Ti, W, Mn, Fe, Ni, B, Sn, or Pb) 0 <x, 0 <y <1, and 0 <z <2. The battery has an enhanced high current charge and discharge characteristic with a high voltage and high energy d. but with less deterioration due to overcharge and overdischarge, and also has a long service life.
IC ICM H01M004-48
ICS H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium nonaq **electrolyte** battery anode; titanium silicon oxide battery anode; tungsten silicon oxide battery anode; manganese silicon oxide battery anode; iron silicon oxide battery anode; nickel silicon oxide battery anode; boron silicon oxide battery anode; tin silicon oxide battery anode; lead silicon oxide battery anode
IT Batteries, secondary

(nonaq.-**electrolyte** lithium)
IT Anodes
(battery, complex lithium oxides for)
IT 39302-36-8, Lithium silicon titanium oxide **158710-01-1**, Lithium silicon tungsten oxide (Li0-1Si0.9W0.1O1.1) 158710-02-2, Lithium silicon tin oxide (Li0-1Si0-1Sn0-1O2) 158710-03-3, Lead lithium silicon oxide (Pb0-1Li0-1Si0-1O2) 158710-04-4, Lithium silicon borate oxide (Li0-1Si0.25-1(BO2)0-0.75O1.62-2) 158710-05-5, Lithium manganese silicon oxide (Li0-1Mn0-0.75Si0.25-1O2)
RL: DEV (Device component use); USES (Uses)
(anodes for lithium nonaq.-**electrolyte** batteries)
IT 158697-57-5, Silicon tungsten oxide (Si0.9W0.1O1.1) 158697-58-6, Silicon tin oxide (Si0.9Sn0.1O) 158697-59-7, Lead silicon oxide (Pb0.1Si0.9O) 158697-60-0, Silicon borate oxide (Si0.9(BO3)0.1O0.75) 158697-61-1, Manganese silicon oxide (Mn0.5Si0.5O) 158697-62-2, Silicon titanium oxide (Si0.75Ti0.25O) 158697-63-3, Silicon titanium oxide (Si0.5Ti0.5O) 158697-64-4, Silicon titanium oxide (Si0.25Ti0.75O)
RL: DEV (Device component use); USES (Uses)
(anodes for lithium nonaq.-**electrolyte** batteries from lithiated)
IT **158710-01-1**, Lithium silicon tungsten oxide (Li0-1Si0.9W0.1O1.1)
RL: DEV (Device component use); USES (Uses)
(anodes for lithium nonaq.-**electrolyte** batteries)
RN 158710-01-1 HCAPLUS
CN Lithium silicon tungsten oxide (Li0-1Si0.9W0.1O1.1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	1.1	17778-80-2
W	0.1	7440-33-7
Si	0.9	7440-21-3
Li	0 - 1	7439-93-2

L25 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:67519 HCAPLUS
DN 112:67519
TI The structure and electrical properties of solid lithium **electrolytes** in the systems Li4ZO4-Li2Z'O4 (Z = silicon, germanium)
AU Burmakin, E. I.
CS Inst. Electrochem., Sverdlovsk, 620066, USSR
SO Solid State Ionics (1989), 36(3-4), 155-7
CODEN: SSIOD3; ISSN: 0167-2738
DT Journal
LA English
AB In the systems based on Li4SiO4 and Li4GeO4 with Li2Z'O4 additives (Z' = S, Cr, Se, Mo, W), the solid Li **electrolytes** of 2 principally different structural types are formed: Li4ZO4-type and γ-Li3PO4 type. The 2nd type has the higher conductivities, >10-1 Sm cm-1 at 300°.
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 75
ST conductor lithium silicate germanate; sulfate lithium silicate germanate conductor; chromate lithium silicate germanate conductor; selenate lithium silicate germanate conductor; molybdate lithium silicate germanate conductor; tungstate lithium silicate germanate conductor; structure lithium silicate germanate conductor; cond lithium silicate germanate conductor

IT Electric conductivity and conduction
Electric resistance
(of lithium germanate and lithium silicate solid solns. with lithium chromate and lithium molybdate and lithium sulfate and lithium selenate and lithium tungstate)

IT 124923-36-0, Lithium silicate sulfate (Li2.6-4(SiO4)0.3-1(SO4)0-0.7) 124923-37-1, Chromium lithium oxide silicate (Cr0-0.45Li3.1-4O0-1.8(SiO4)0.55-1) 124923-38-2, Lithium selenate silicate (Li3.25-4(SeO4)0-0.38(SiO4)0.62-1) 124923-39-3, Lithium molybdenum oxide silicate (Li3.2-4Mo0-0.4O0-1.6(SiO4)0.6-1) **124964-22-3**, Lithium tungsten oxide silicate (Li3.4-4W0-0.3O0-1.2(SiO4)0.7-1)
RL: PRP (Properties)
(crystal structure and elec. conductivity of)

IT **124964-22-3**, Lithium tungsten oxide silicate (Li3.4-4W0-0.3O0-1.2(SiO4)0.7-1)
RL: PRP (Properties)
(crystal structure and elec. conductivity of)

RN 124964-22-3 HCAPLUS

CN Lithium tungsten oxide silicate (Li3.4-4W0-0.3O0-1.2(SiO4)0.7-1) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	0 - 1.2	17778-80-2
O4Si	0.7 - 1	17181-37-2
W	0 - 0.3	7440-33-7
Li	3.4 - 4	7439-93-2

Claim 2 Starting Materials

```
=> => d que l52
L20             3 SEA FILE=REGISTRY ABB=ON  1313-96-8 OR 1314-35-8 OR 1314-61-0
L21             1 SEA FILE=REGISTRY ABB=ON  10377-52-3
L22             1 SEA FILE=REGISTRY ABB=ON  7631-86-9
L23             1 SEA FILE=REGISTRY ABB=ON  12057-24-8
L26         73349 SEA FILE=HCAPLUS ABB=ON  L20 OR NB2O5 OR NIOBIUM OXIDE OR WO3
                  OR TUNGSTEN OXIDE OR TA2O5 OR TANTALUM OXIDE
L27         23518 SEA FILE=HCAPLUS ABB=ON  L23 OR LI2 O OR LITHIUM OXIDE
L28          2130 SEA FILE=HCAPLUS ABB=ON  L26 AND L27
L29        717046 SEA FILE=HCAPLUS ABB=ON  L22 OR SILICA OR SIO2 OR SILICON
                  OXIDE
L30          1007 SEA FILE=HCAPLUS ABB=ON  L28 AND L29
L31         11737 SEA FILE=HCAPLUS ABB=ON  L26(L)PROC/RL
L32           125 SEA FILE=HCAPLUS ABB=ON  L30 AND L31
L33             4 SEA FILE=HCAPLUS ABB=ON  L32 AND ELECTROLYT?
L34            29 SEA FILE=HCAPLUS ABB=ON  L30 AND ELECTROLYT?
L35          2451 SEA FILE=HCAPLUS ABB=ON  L21 OR LI3PO4 OR LITHIUM PHOSPHATE
L36            84 SEA FILE=HCAPLUS ABB=ON  L27 AND L35 AND L29
L38            38 SEA FILE=HCAPLUS ABB=ON  L36 AND ELECTROLYT?
L39            61 SEA FILE=HCAPLUS ABB=ON  L34 OR L38
L40            12 SEA FILE=HCAPLUS ABB=ON  L39 AND PROC/RL
L43            27 SEA FILE=HCAPLUS ABB=ON  L39 AND SOLID?(3A)ELECTROLYT?
L44           305 SEA FILE=HCAPLUS ABB=ON  L35(L)PROC/RL
L45             2 SEA FILE=HCAPLUS ABB=ON  L43 AND L44
L46             9 SEA FILE=HCAPLUS ABB=ON  L44 AND L29 AND L27
L47            38 SEA FILE=HCAPLUS ABB=ON  L43 OR L33 OR L40 OR L43 OR L45 OR
                  L46
L52            27 SEA FILE=HCAPLUS ABB=ON  L47 AND ELECTROCHEM?/SC,SX
```

=> d l52 bib abs hitind hitstr 1-27

L52 ANSWER 1 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:923790 HCAPLUS
DN 142:138240
TI Inorganic **solid electrolyte** for lithium secondary battery
IN Ju, Gyeong Hui; Lee, Cheol Heum; Oh, Ju Yeol; Park, Yeong Sin; Son, Heon Jun
PA Samsung SDI Co., Ltd., S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT Patent
LA Korean
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI KR 2002040940	A	20020531	KR 2000-70634	20001125
PRAI KR 2000-70634		20001125		

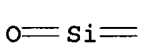
AB The **electrolyte** comprises a Se composite oxide of formula: aM-bSeO2-cN-dQ (M = network modifier; N = network former; Q = Li salt; a = 0.24-0.6, b = 0.048-0.4, c = 0.048-0.48, d = 0-0.4.), 4.8-48 mol% of a network former selected from B2O3, P2O5, TeO2, **SiO2**, and LiPO3, 4.8-40 mol% of SeO2, 24-60 mol% of a network modifier selected from Li2O and Li2S, and 0-40 mol% of a Li salt selected from LiI, **Li3PO4**, Li2SO4, LiCl, Li2Se, LiF, LiBr. The **electrolyte** improves ionic conductivity, charge/discharge rate, and extends service life of the lithium secondary battery.
IC ICM H01M004-48
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST inorg **solid electrolyte** lithium secondary battery
IT Battery **electrolytes**
Electric conductivity
Ionic conductivity
(inorg. **solid electrolyte** for lithium secondary battery)
IT 1314-56-3, Phosphorus oxide (P2O5), uses 7447-41-8, Lithium chloride (LiCl), uses 7550-35-8, Lithium bromide (LiBr) 7789-24-4, Lithium fluoride (LiF), uses 10377-51-2, Lithium iodide (LiI) **12057-24-8**, **Lithium oxide** (Li2O), uses 12136-58-2, Lithium sulfide (Li2S)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PROC (Process)**; USES (Uses)
(inorg. **solid electrolyte** for lithium secondary battery)
IT **12057-24-8**, **Lithium oxide** (Li2O), uses
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); **PROC (Process)**; USES (Uses)
(inorg. **solid electrolyte** for lithium secondary battery)
RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)

Li—O—Li

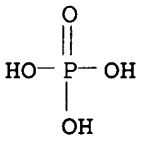
L52 ANSWER 2 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:728315 HCAPLUS
DN 141:398069
TI Application of Lithium Metal Electrodes to All-Solid-State Lithium Secondary Batteries Using **Li3PO4**-Li2S-SiS2 Glass
AU Takahara, Hikari; Tabuchi, Mitsuharu; Takeuchi, Tomonari; Kageyama, Hiroyuki; Ide, Junko; Handa, Katsumi; Kobayashi, Yo; Kurisu, Yasuyuki; Kondo, Shigeo; Kanno, Ryoji
CS Green Life Technology, National Institute of Advanced Industrial Science and Technology (AIST), Ikeda, Osaka, 563-8577, Japan
SO Journal of the Electrochemical Society (2004), 151(9), A1309-A1313
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB The **Li3PO4**-Li2S-SiS2 glass **electrolyte** exhibited instability against a Li metal electrode in the charge-discharge cycle using a LiCoO2 pos. electrode. The interface products between the Li electrode and the glass **electrolyte** were studied by Si and S-K edge near-edge x-ray absorption fine structure analyses. Probably Li2S and Si coordinated to three sulfur atoms formed after charge-discharge cycles. This side reaction could be suppressed by modifying the surface of Li metal by N2 gas, leading to improvement of the charge-discharge property compared to unmodified Li electrode. The operating voltage attained to .apprx.4 V in the modified Li/**Li3PO4**-Li2S-SiS2 glass **electrolyte**/LiCoO2 cell, which was comparable to Li-ion battery using a liquid **electrolyte.**
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST lithium electrode **solid** secondary battery **electrolyte** thiosilicate glass; interface reaction **lithium phosphate** sulfide thiosilicate x ray absorption
IT Electric conductors, glass
Solid electrolytes
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT Electric potential
(during polarization/lithiation reaction; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT Battery **electrolytes**
(effect of exposure to lithium electrode; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT Sulfide glasses
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(**lithium phosphate** sulfide thiosilicate; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT Secondary batteries
(lithium; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT Electric current-potential relationship
(of assembled batteries with Li or In electrodes; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)

IT Coordination number
(of silicon atoms in the glass; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4** -Li2S-SiS2 glass)
IT Group VIA element compounds
Silicates, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(thiosilicates; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4** -Li2S-SiS2 glass)
IT 12190-79-3, Cobalt **lithium oxide** (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 7439-93-2, Lithium, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); RCT (Reactant); TEM (Technical or engineered material use); **PROC (Process)**; RACT (Reactant or reagent); USES (Uses)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 326903-56-4, **Lithium phosphate** sulfide thiosilicate (Li1.39(PO4)0.01S0.27(SiS3)0.36)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 7440-74-6, Indium, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 12136-58-2, Lithium sulfide (Li2S)
RL: FMU (Formation, unclassified); PRP (Properties); RCT (Reactant); FORM (Formation, nonpreparative); RACT (Reactant or reagent)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 7440-21-3, Silicon, properties **7631-86-9, Silica**, properties 7704-34-9, Sulfur, properties
RL: PRP (Properties)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT **10377-52-3, Lithium phosphate (Li3PO4**) 13759-10-9, Silicon sulfide (SiS2)
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 7727-37-9, Nitrogen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
IT 26134-62-3, Lithium nitride (Li3N)
RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
(formed at electrode surface; application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4** -Li2S-SiS2 glass)
IT **7631-86-9, Silica**, properties
RL: PRP (Properties)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **10377-52-3, Lithium phosphate (Li3PO4)**
RL: PRP (Properties); RCT (Reactant); RACT (Reactant or reagent)
(application of lithium metal electrodes to all-solid-state lithium secondary batteries using **Li3PO4**-Li2S-SiS2 glass)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



RE.CNT 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 3 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:633118 HCAPLUS
DN 141:126408
TI Lithium based electrochemical cell systems with suppression of gas evolution
IN Hyung, Yoo-Eup; Vissers, Donald R.; Amine, Khalil
PA The University of Chicago, USA
SO U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004151951	A1	20040805	US 2003-738400	20031217
PRAI US 2002-434214P	P	20021217		

OS MARPAT 141:126408
AB Primary and secondary Li-ion and lithium-metal based electrochem. cell systems are disclosed. Suppression of gas generation is achieved in the cell through the addition of an additive or additives to the **electrolyte** system of the resp. cell, or to the cell whether it be a liquid, a **solid**- or plasticized polymer **electrolyte** system. The gas suppression additives are preferably based on unsatd. hydrocarbons.
IC ICM H01M016-00
ICS H01M004-50; H01M004-58; H01M004-52; H01M010-40; H01M010-34; H01M010-52; H01M004-48
INCL 429009000; 429231400; 429231950; 429149000; 429326000; 429331000; 429332000; 429231100; 429231300; 429224000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy

Technology)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses 7791-03-9, Lithium perchlorate 11099-11-9, Vanadium oxide 12022-46-7, Iron **lithium oxide** felio2 12031-65-1, Lithium nickel oxide linio2 12031-72-0, Lithium magnesium manganese oxide limg0.5mn1.5o4 12057-17-9, Lithium manganese oxide limn2o4 12190-79-3, Cobalt **lithium oxide** colio2 12676-27-6D, derivs. 14283-07-9, Lithium tetrafluoroborate 15365-14-7, Iron **lithium phosphate** felipo4 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 128975-24-6, Lithium manganese nickel oxide limn0.5ni0.5o2 132404-42-3 132843-44-8 177997-11-4, Cobalt gallium lithium nickel oxide 177997-12-5, Boron Cobalt lithium nickel oxide 177997-13-6, Aluminum cobalt lithium nickel oxide 244304-18-5, Cobalt lithium nickel **silicon oxide** 244304-20-9, Cobalt lithium nickel titanium oxide 304646-82-0D, Phosphorofluoridic acid, monolithium salt, alkyl derivative 609349-41-9, Cobalt Lithium manganese nickel oxide Co0.3limn0.3ni0.3o2
RL: DEV (Device component use); USES (Uses)
(lithium based electrochem. cell systems with suppression of gas evolution)

L52 ANSWER 4 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:493210 HCAPLUS
DN 141:26184
TI Membrane-electrode laminate and fuel cell
IN Kato, Masahiro; Gonohe, Yasuhiro
PA Toshiba Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004171997	A2	20040617	JP 2002-338041	20021121
PRAI JP 2002-338041		20021121		

AB The laminate has a **solid electrolyte** membrane between a cathode and an anode; where the membrane contains ≥1 silicate salt selected from LixSi1-yTyOz (T = Ti, Zr, Hf, Ge, Sn and/or P; x = 3.2-4.8; y = 0-1.3; z = 3.2-4.8), Li2-aAlaSi1-yTyOz (T = Ti, Zr, Hf, Ge, Sn and/or P; a = 0.8-1.2; y = 0-1.3; z = 3.2-4.8), K2-bAlbSi1-yTyOz (T = Ti, Zr, Hf, Ge, Sn and/or P; b = 0.8-1.2; y = 0-1.3; z = 3.2-4.8), and Cs2-dAldSi1-yTyOz (T = Ti, Zr, Hf, Ge, Sn and/or P; d = 0.8-1.2; y = 0-1.3; z = 3.2-4.8). The fuel cell has the above laminate and a pair of separators having an oxidant gas passage and/or a fuel passage.
IC ICM H01M008-02
ICS C04B035-16; H01M008-12
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST fuel cell structure **electrolyte** membrane silicate salt
IT Fuel cell **electrolytes**
Fuel cells
(membrane-electrode laminates containing silicate salts in **electrolyte** membranes for fuel cells)
IT 7440-02-0, Nickel, uses 12003-48-4, Aluminum cesium silicate (AlCsSiO4) 12003-49-5, Aluminum potassium silicate (AlKSiO4) 13453-84-4, Lithium **silicon oxide** (Li4SiO4) 19497-94-0, Aluminum lithium

silicon oxide (AlLiSiO4) 223506-76-1, Lanthanum manganese strontium oxide (La0.87MnSr0.1O3) 700866-82-6, Lithium titanium oxide silicate (Li4Ti0.3O1.2(SiO4)0.7) 700866-83-7, Lithium zirconium oxide silicate (Li4Zr0.3O1.2(SiO4)0.7) 700866-85-9, Hafnium **lithium oxide** silicate (Hf0.3Li4O1.2(SiO4)0.7) 700866-87-1, Germanium **lithium oxide** silicate (Ge0.3Li4O1.2(SiO4)0.7) 700866-89-3, Lithium tin oxide silicate (Li4Sn0.3O1.2(SiO4)0.7) 700866-90-6, **Lithium phosphate** silicate (Li4(PO4)0.3(SiO4)0.7) 700866-91-7, Aluminum lithium titanium oxide silicate (AlLiTi0.3O1.2(SiO4)0.7) 700866-92-8 700866-94-0, Aluminum hafnium **lithium oxide** silicate (AlHf0.3LiO1.2(SiO4)0.7) 700866-95-1 700866-97-3, Aluminum lithium tin oxide silicate (AlLiSn0.3O1.2(SiO4)0.7) 700866-98-4, Aluminum **lithium phosphate** silicate (AlLi(PO4)0.3(SiO4)0.7) 700866-99-5 700867-01-2 700867-02-3 700867-04-5 700867-07-8, Aluminum potassium tin oxide silicate (AlKSn0.3O1.2(SiO4)0.7) 700867-10-3, Aluminum potassium phosphate silicate (AlK(PO4)0.3(SiO4)0.7) 700867-13-6, Aluminum cesium titanium oxide silicate (AlCsTi0.3O1.2(SiO4)0.7) 700867-16-9, Aluminum cesium zirconium oxide silicate (AlCsZr0.3O1.2(SiO4)0.7) 700867-19-2, Aluminum cesium hafnium oxide silicate (AlCsHf0.3O1.2(SiO4)0.7) 700867-21-6, Aluminum cesium germanium oxide silicate (AlCsGe0.3O1.2(SiO4)0.7) 700867-24-9, Aluminum cesium tin oxide silicate (AlCsSn0.3O1.2(SiO4)0.7) 700867-27-2, Aluminum cesium phosphate silicate (AlCs(PO4)0.3(SiO4)0.7)
RL: DEV (Device component use); USES (Uses)
(membrane-electrode laminates containing silicate salts in **electrolyte** membranes for fuel cells)

L52 ANSWER 5 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:433468 HCAPLUS
DN 140:409693
TI Lithium ion-conductive **solid electrolyte** and total **solid** state battery which uses the **electrolyte**
IN Iwamoto, Kazuya
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

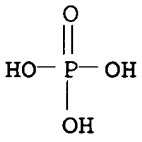
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004152659	A2	20040527	JP 2002-317732	20021031
PRAI	JP 2002-317732		20021031		

AB The **electrolyte** contains Li2S, niobium sulfide, and/or tantalum sulfide. The battery has the above **electrolyte** between a cathode and an anode.
IC ICM H01M010-36
ICS C01G033-00; C01G035-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST secondary battery inorg **solid** state **electrolyte** glass; battery **electrolyte** lithium sulfide niobium sulfide tantalum sulfide
IT Battery **electrolytes**
Secondary batteries
(**electrolytes** containing lithium sulfide, niobium sulfide, and/or tantalum sulfide for secondary batteries)
IT 1302-81-4, Aluminum sulfide (Al2S3) 1314-80-3, Phosphorus sulfide (P2S5) 10102-24-6, Lithium **silicon oxide** (Li2SiO3)

10377-52-3, Lithium phosphate (Li3PO4) 12003-67-7, Aluminum **lithium oxide** (AlLiO2) 12007-33-9, Boron sulfide (B2S3) 12025-34-2, Germanium sulfide (GeS2) 12031-63-9, Lithium **niobium oxide** (LiNbO3) 12031-66-2, Lithium **tantalum oxide** (LiTaO3) 12136-58-2, Lithium sulfide 12136-97-9, Niobium sulfide (NbS2) 12143-72-5, Tantalum sulfide (TaS2) 12315-28-5, Germanium **lithium oxide** (GeLi2O3) 13453-69-5, Boron **lithium oxide** (BLiO2) 13453-84-4, Lithium silicate (Li4SiO4) 13759-10-9, Silicon sulfide (SiS2) 50644-88-7, Germanium sulfide (Ge2S3)
RL: DEV (Device component use); USES (Uses)
(**electrolytes** containing lithium sulfide, niobium sulfide, and/or tantalum sulfide for secondary batteries)

IT **10377-52-3, Lithium phosphate (Li3PO4)**
RL: DEV (Device component use); USES (Uses)
(**electrolytes** containing lithium sulfide, niobium sulfide, and/or tantalum sulfide for secondary batteries)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

L52 ANSWER 6 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:430509 HCAPLUS
DN 140:426100
TI **Solid electrolyte** for battery
IN Park, Young-sin; Lee, Seok-soo; Jin, Young-gu
PA Samsung Electronics Co., Ltd., S. Korea
SO U.S. Pat. Appl. Publ., 7 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004101761	A1	20040527	US 2003-656180	20030908
	EP 1427042	A1	20040609	EP 2003-255187	20030821
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004179161	A2	20040624	JP 2003-387552	20031118
PRAI	KR 2002-74362	A	20021127		

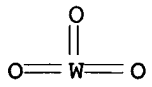
applicant

AB A **solid electrolyte**, a method of manufacturing the same, and a lithium battery and a thin-film battery that employ the **solid electrolyte** are provided. The **solid electrolyte** contains nitrogen to enhance the ionic conductivity and electrochem. stability of batteries.

IC ICM H01M006-18

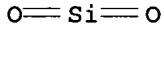
ICS C04B035-00
INCL 429322000; 501096100; 501096500
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST battery **solid electrolyte**
IT Vapor deposition process
(chemical; **solid electrolyte** for battery)
IT Electron beams
(deposition by; **solid electrolyte** for battery)
IT Ion beams
(deposition ny; **solid electrolyte** for battery)
IT Secondary batteries
(lithium; **solid electrolyte** for battery)
IT Battery **electrolytes**
Sputtering
(**solid electrolyte** for battery)
IT **1313-96-8**, **Niobium oxide (Nb2O5)**
1314-35-8, **Tungsten oxide (WO3)**,
processes **1314-61-0**, **Tantalum oxide (Ta2O5)** **7631-86-9**, **Silica**, processes
10377-52-3 **12057-24-8**, **Lithium oxide** (Li2O), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(**solid electrolyte** for battery)
IT 691009-59-3P, Lithium **niobium oxide** silicate (Li0.32Nb0.32O0.29(SiO3)0.67) 691009-60-6P, Lithium **niobium oxide** silicate (Li1.16Nb0.58O1.77(SiO4)0.13) 691009-62-8P, Lithium **niobium oxide** silicate (Li1.16Nb0.26O0.65(SiO4)0.29) 691009-64-0P, Lithium **niobium oxide** silicate (Li1.34Nb0.32O1.15(SiO4)0.16) 691009-66-2P, Lithium **niobium oxide** silicate (Li1.3Nb0.1O0.3(SiO4)0.3) 691009-68-4P, Lithium **niobium oxide** silicate (Li1.4Nb0.2O0.8(SiO4)0.2) 691009-70-8P, Lithium **niobium oxide** silicate (Li1.4Nb0.1O0.45(SiO4)0.25) 691009-72-0P, **Lithium oxide** phosphate silicate (Li1.55O0.2(PO4)0.05(SiO4)0.25)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**solid electrolyte** for battery)
IT 7440-37-1, Argon, uses 7727-37-9, Nitrogen, uses 7782-44-7, Oxygen, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**solid electrolyte** for battery)
IT **1313-96-8**, **Niobium oxide (Nb2O5)**
1314-35-8, **Tungsten oxide (WO3)**,
processes **1314-61-0**, **Tantalum oxide (Ta2O5)** **7631-86-9**, **Silica**, processes
10377-52-3 **12057-24-8**, **Lithium oxide** (Li2O), processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(**solid electrolyte** for battery)
RN 1313-96-8 HCAPLUS
CN Niobium oxide (Nb2O5) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 1314-35-8 HCAPLUS
CN Tungsten oxide (WO3) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

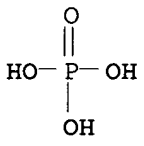


RN 1314-61-0 HCAPLUS
CN Tantalum oxide (Ta2O5) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

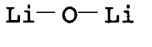


RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 7 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:412652 HCAPLUS
DN 140:378137
TI Preparation of **solid electrolyte** for lithium rechargeable batteries
IN Shibano, Yasuyuki; Iwamoto, Kazuya
PA Matsushita Electric Industrial Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2004096745	A1	20040520	US 2003-702491	20031107
JP 2004179158	A2	20040624	JP 2003-381940	20031112
PRAI JP 2002-328476	A	20021112		

AB A lithium ion conductor is prepared having the general formula LiaNbbTacOdNe where 0.1≤a≤2.5, 0≤b<1, 0<c≤1, b+c=1, 0.1≤d≤5, and 0.1≤e≤2. The prepared lithium ion

conductor is used as **solid electrolyte** in lithium ion rechargeable batteries.

IC ICM C01B021-20
INCL 429322000; 423385000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST lithium secondary battery **solid electrolyte** oxide nitride
IT Secondary batteries
(lithium; preparation of **solid electrolyte** for lithium rechargeable batteries)
IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(base plate, electrode; preparation of **solid electrolyte** for lithium rechargeable batteries)
IT 1314-62-1, Vanadium pentoxide, uses 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 12022-46-7, Iron **lithium oxide** felio2 12031-65-1, Lithium nickel oxide linio2 12031-95-7, Lithium titanium oxide li4ti5o12 12057-17-9, Lithium manganese oxide limn2o4 12190-79-3, Cobalt **lithium oxide** colio2 13824-63-0, Cobalt **lithium phosphate** 15365-14-7, Iron **lithium phosphate** felipo4 372075-87-1, Iron lithium fluoride phosphate felifpo4 433708-99-7, Cobalt lithium fluoride phosphate colifpo4 685528-73-8, Cobalt lithium nitride oxide (Co2.6LiNO0.4)
RL: DEV (Device component use); USES (Uses)
(electrode; preparation of **solid electrolyte** for lithium rechargeable batteries)
IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(neg. electrode current collector; preparation of **solid electrolyte** for lithium rechargeable batteries)
IT 7440-06-4, Platinum, uses
RL: DEV (Device component use); USES (Uses)
(pos. electrode current collector; preparation of **solid electrolyte** for lithium rechargeable batteries)
IT **7631-86-9**, **Silica**, uses
RL: DEV (Device component use); USES (Uses)
(preparation of **solid electrolyte** for lithium rechargeable batteries)
IT 7727-37-9P, Nitrogen, uses 12031-63-9P, Lithium **niobium oxide** linbo3 12031-66-2P, Lithium **tantalum oxide** litao3
RL: NUU (Other use, unclassified); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent); USES (Uses)
(preparation of **solid electrolyte** for lithium rechargeable batteries)
IT 685528-55-6P, Lithium tantalum nitride oxide (Li0.75TaN0.5O2.1) 685528-56-7P, Lithium niobium tantalum nitride oxide (Li0.8Nb0.1Ta0.9N0.55O2.1) 685528-57-8P, Lithium niobium tantalum nitride oxide (Li0.76Nb0.19Ta0.81N0.53O2.1) 685528-58-9P, Lithium niobium tantalum nitride oxide (Li0.85Nb0.33Ta0.67N0.49O2.2) 685528-59-0P, Lithium niobium tantalum nitride oxide (Li0.77Nb0.39Ta0.61N0.51O2.1) 685528-60-3P, Lithium niobium tantalum nitride oxide (Li0.69Nb0.53Ta0.47N0.52O2.1) 685528-61-4P, Lithium niobium tantalum nitride oxide (Li0.6Nb0.6Ta0.4N0.53O2) 685528-62-5P, Lithium niobium tantalum nitride oxide (Li0.67Nb0.71Ta0.29N0.54O2) 685528-63-6P, Lithium niobium tantalum nitride oxide (Li0.72Nb0.82Ta0.18N0.6O2) 685528-64-7P, Lithium niobium tantalum nitride oxide (Li0.77Nb0.89Ta0.11N0.67O1.9) 685528-65-8P, Lithium

niobium tantalum nitride oxide (Li0.8Nb0.95Ta0.05N0.66O1.9) 685528-66-9P, Lithium niobium nitride oxide (Li0.91NbN0.61O2) 685528-67-0P, Lithium niobium tantalum nitride oxide (Li0.68Nb0.71Ta0.29N0.06O2.8) 685528-68-1P, Lithium niobium tantalum nitride oxide (Li0.68Nb0.71Ta0.29N0.12O2.7) 685528-69-2P, Lithium niobium tantalum nitride oxide (Li0.7Nb0.82Ta0.18N0.36O2.3) 685528-70-5P, Lithium niobium tantalum nitride oxide (Li0.75Nb0.89Ta0.11N0.82O1.6) 685528-71-6P, Lithium niobium tantalum nitride oxide (Li0.79Nb0.95Ta0.05N1.1O1.2) 685528-72-7P, Lithium niobium tantalum nitride oxide (Li0.85Nb0.75Ta0.25N1.5O0.7)
RL: NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(preparation of **solid electrolyte** for lithium rechargeable batteries)

IT **7631-86-9**, **Silica**, uses
RL: DEV (Device component use); USES (Uses)
(preparation of **solid electrolyte** for lithium rechargeable batteries)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L52 ANSWER 8 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:331032 HCAPLUS
DN 140:342190
TI Integrated thermoelectric cell-thin film battery
IN Shibano, Yasuyuki; Ito, Shuji; Iwamoto, Kazuya; Mino, Shinji; Higuchi, Hiroshi; Ukaji, Masaya; Inaba, Junichi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004127744	A2	20040422	JP 2002-290904	20021003
PRAI JP 2002-290904		20021003		

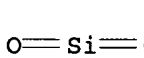
AB The integrated thermoelec. cell-thin film battery has a stack of power generating section and thermoelec. cell section formed on continuous film, where the power generating section has a stack containing a cathode, a **solid electrolyte**, and an anode and the thermoelec. element uses the heat generated by the battery to produce electricity to charge the battery.

IC ICM H01M010-39
ICS H01L035-30; H01L035-34; H01M010-40; H02N011-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT **7631-86-9**, **Silica**, uses
RL: DEV (Device component use); USES (Uses)
(insulation film; thin film secondary lithium batteries with integrated thermoelec. elements for charging battery with battery waste heat)
IT 1304-82-1, Bismuth telluride (Bi2Te3) 7440-44-0, Carbon, uses **10377-52-3**, **Lithium phosphate** (**Li3PO4**) 12190-79-3, Cobalt **lithium oxide** (CoLiO2) 13453-84-4, Lithium silicate (Li4SiO4) 31501-07-2, Antimony bismuth

telluride (Sb3BiTe6)
RL: DEV (Device component use); USES (Uses)
(thin film secondary lithium batteries with integrated thermoelec. elements for charging battery with battery waste heat)

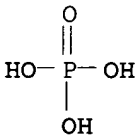
IT **7631-86-9, Silica**, uses
RL: DEV (Device component use); USES (Uses)
(insulation film; thin film secondary lithium batteries with integrated thermoelec. elements for charging battery with battery waste heat)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **10377-52-3, Lithium phosphate (Li3PO4)**
RL: DEV (Device component use); USES (Uses)
(thin film secondary lithium batteries with integrated thermoelec. elements for charging battery with battery waste heat)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)

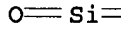


L52 ANSWER 9 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:250445 HCAPLUS
DN 140:273561
TI Solid state battery and its manufacture
IN Higuchi, Hiroshi; Ukaji, Masaya; Ito, Shuji; Honda, Kazuyoshi; Takai, Yoriko; Okazaki, Sadayuki; Sakai, Hitoshi; Inaba, Junichi
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 23 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

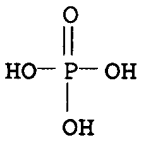
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2004095342	A2	20040325	JP 2002-254962	20020830
PRAI JP 2002-254962		20020830		

AB The battery has a stack containing layers of cathode active mass, **solid electrolyte**, anode active mass, and collector; where the **electrolyte** has at least a layer containing Li+ conducting inorg. **solid electrolyte** and an organic polymer. The battery is prepared by forming the **solid electrolyte** layer on the surface of cathode active mass layers and anode active mass layers in an atmospheric containing the atoms, ions, or clusters of the **electrolyte** components and the polymer or its monomer or a low

mol. weight polymer.
IC ICM H01M010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
IT Battery **electrolytes**
(compns. and manufacture of **solid** lithium conducting **electrolytes** containing organic polymers for secondary lithium batteries)
IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(compns. and manufacture of **solid** lithium conducting **electrolytes** containing organic polymers for secondary lithium batteries)
IT Polyketones
RL: DEV (Device component use); USES (Uses)
(polyether-; compns. and manufacture of **solid** lithium conducting **electrolytes** containing organic polymers for secondary lithium batteries)
IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polyketone-; compns. and manufacture of **solid** lithium conducting **electrolytes** containing organic polymers for secondary lithium batteries)
IT 75-21-8D, Ethylene oxide, polymer with trifluorosulfonimides 1314-62-1, Vanadium pentoxide, uses **7631-86-9**, **Silica**, uses 9002-88-4, Polyethylene 9016-80-2, Polymethylpentene **10377-52-3**, **Lithium phosphate (Li3PO4)** **12057-24-8**, **Lithium oxide**, uses 12136-58-2, Lithium sulfide 13759-10-9, Silicon disulfide 25038-59-9, Poly(ethylene terephthalate), uses 668998-68-3, Lithium phosphorus nitride oxide (LiPNO)
RL: DEV (Device component use); USES (Uses)
(compns. and manufacture of **solid** lithium conducting **electrolytes** containing organic polymers for secondary lithium batteries)
IT 7439-93-2, Lithium, processes 7782-42-5, Graphite, processes 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt **lithium oxide** (CoLiO2) 674333-73-4D, Cobalt lithium nitride (Co3Li3N), lithium deficient
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); **PROC (Process)**
(deposition of **solid** lithium conducting **electrolytes** containing organic polymers on electrodes for secondary lithium batteries)
IT **7631-86-9**, **Silica**, uses **10377-52-3**, **Lithium phosphate (Li3PO4)** **12057-24-8**, **Lithium oxide**, uses
RL: DEV (Device component use); USES (Uses)
(compns. and manufacture of **solid** lithium conducting **electrolytes** containing organic polymers for secondary lithium batteries)
RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

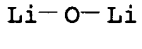


RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 10 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:180560 HCAPLUS
DN 140:238416
TI Total solid state battery and evaluation method
IN Mino, Shinji; Ishii, Hironori
PA Matsushita Electric Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 18 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004071303	A2	20040304	JP 2002-227807	20020805
PRAI	JP 2002-227807		20020805		

AB The battery is made by laminating on a substrate in that order: a first electrode layer, a **solid electrolyte** layer, and a second electrode layer. An electron collection layer is formed which contacts with at least one of the electrode layer. A test chip is form on the same substrate at a different location to the solid state battery with a pair of conducting terminals on the 2 ends or on the top and bottom of the test chip. The battery is evaluated by measuring the characteristic data of the battery and the battery test chip.
IC ICM H01M010-36
ICS H01M002-22; H01M010-48
CC 52-1 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 76
IT 7440-43-9, Cadmium, uses 11126-15-1, Lithium vanadium oxide 12023-04-0 12053-95-1 12054-48-7, Nickel hydroxide (Ni(OH)2) 12057-65-7 12067-91-3 12186-89-9 12190-79-3, Cobalt **lithium oxide** CoLiO2 12196-72-4 12213-73-9 12680-08-9, Lithium titanium sulfide 22205-45-4, Copper sulfide Cu2S 37296-91-6, Lithium molybdenum oxide 37367-96-7, Lithium molybdenum sulfide 39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide 66118-28-3 68939-05-9, Copper titanium sulfide 70537-07-4, Silver titanium sulfide 111346-27-1, Copper molybdenum sulfide Cu2Mo6S7.8 126044-10-8, Silver vanadium oxide Ag0.7V2O5 667421-48-9
RL: DEV (Device component use); USES (Uses)

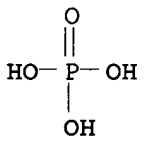
(electrode active material containing; total solid state battery and evaluation method using test chip)

IT 1303-86-2, Boron oxide, uses 1310-65-2, Lithium hydroxide (Li(OH)) 1313-27-5, Molybdenum oxide MoO3, uses 1314-56-3, Phosphorus oxide (P2O5), uses 1314-62-1, Vanadium oxide (V2O5), uses 1314-80-3, Phosphorus sulfide (P2S5) 1317-39-1, Copper oxide (Cu2O), uses 7681-65-4, Copper iodide (CuI) 7783-96-2, Silver iodide AgI 10377-51-2, Lithium iodide (LiI) **10377-52-3** 12007-33-9, Boron sulfide B2S3 12031-48-0, Lanthanum zirconium oxide La2Zr2O7 **12057-24-8**, **Lithium oxide** (Li2O), uses 12136-58-2, Lithium sulfide (Li2S) 13759-10-9, Silicon sulfide SiS2 26134-62-3, Lithium nitride (Li3N) 39390-08-4, Silver iodide tungstate Ag6I4WO4 73379-32-5, Copper rubidium chloride iodide (Cu8Rb2Cl7I3) 101993-97-9, **Lithium phosphate** silicate (Li18(PO4)2(SiO4)3) 667421-46-7 667421-47-8, Cerium lanthanum magnesium oxide (Ce0.5LaMg0.5O3)
RL: DEV (Device component use); USES (Uses)
(**solid electrolyte** containing; total **solid** state battery and evaluation method using test chip)

IT 1303-00-0, Gallium arsenide, uses 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7439-98-7, Molybdenum, uses 7440-33-7, Tungsten, uses **7631-86-9**, **Silica**, uses 12033-89-5, Silicon nitride, uses 12039-70-2, Titanium silicide TiSi 12166-56-2, Tungsten silicide WSi 12597-84-1, Aluminum copper silicide AlCuSi 14808-60-7, Quartz, uses 37254-60-7 470465-38-4, Titanium silicide TiSi
RL: DEV (Device component use); USES (Uses)
(total solid state battery and evaluation method using test chip)

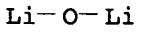
IT **10377-52-3** **12057-24-8**, **Lithium oxide** (Li2O), uses
RL: DEV (Device component use); USES (Uses)
(**solid electrolyte** containing; total **solid** state battery and evaluation method using test chip)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



IT **7631-86-9**, **Silica**, uses
RL: DEV (Device component use); USES (Uses)
(total solid state battery and evaluation method using test chip)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L52 ANSWER 11 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:100613 HCAPLUS
DN 140:131168
TI Apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochemical devices
IN Benson, Martin H.; Neudecker, Bernd J.
PA ITN Energym Systems, Inc., USA
SO U.S. Pat. Appl. Publ., 25 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004023106	A1	20040205	US 2002-210180	20020802
	US 6770176	B2	20040803		
	US 2004219434	A1	20041104	US 2004-840497	20040506
PRAI	US 2002-210180	A3	20020802		

AB An apparatus for use as a fracture absorption layer, an apparatus for use as an electrochem. device, and methods of manufacturing the same are disclosed. The apparatus and methods of the present invention may be of particular use in the manufacture of thin-film, lightwt., flexible or conformable, electrochem. devices such as batteries, and arrays of such devices. The present invention may provide many advantages including stunting fractures in a first electrochem. layer from propagating in a second electrochem. layer.

IC ICM H01M006-00
INCL 429122000; 429126000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **72**
IT Halogen compounds
Per compounds
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(perbromates, sputter target; apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)
IT Halogen compounds
Per compounds
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(periodates, sputter target; apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)
IT Bromides, processes
Chlorides, processes
Fluorides, processes
Iodides, processes
Perchlorates
Selenides
Sulfates, processes
Sulfides, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(sputter target; apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)
IT **Electrolytes**

Primary batteries
(thin-film; apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)

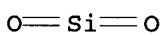
IT 554-13-2, Lithium carbonate 1303-28-2, Arsenic oxide (As2O5) 1303-86-2, Boron oxide (B2O3), uses 1304-56-9, Beryllium oxide beo, uses 1306-38-3, Ceria, uses 1310-53-8, Germanium oxide (GeO2), uses 1314-23-4, Zirconia, uses 1314-36-9, Yttria, uses 1314-56-3, Phosphorus pentoxide, uses 1327-53-3, Arsenic oxide (As2O3) 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-20-2, Scandium, uses 7440-21-3, Silicon, uses 7440-31-5, Tin, uses 7440-38-2, Arsenic, uses 7440-41-7, Beryllium, uses 7440-42-8, Boron, uses 7440-45-1, Cerium, uses 7440-56-4, Germanium, uses 7440-65-5, Yttrium, uses 7440-67-7, Zirconium, uses 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide **7631-86-9**, **Silica**, uses 7704-34-9, Sulfur, uses 7723-14-0, Phosphorus, uses 7723-14-0D, Phosphorus, compound 7789-24-4, Lithium fluoride, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9003-39-8, Polyvinylpyrrolidone 10043-11-5, Boron nitride (BN), uses 10377-48-7, LIthium sulfate 10377-51-2, Lithium iodide **10377-52-3**, **LIthium phosphate** 11118-04-0, Lithium phosphorus nitride Li7PN4 11126-15-1, Lithium vanadium oxide 12003-67-7, Aluminum **lithium oxide** allio2 12005-14-0, Aluminum **lithium oxide** al5lio8 12025-11-5, Germanium **lithium oxide** geli4o4 12033-89-5, Silicon nitride, uses **12057-24-8**, Lithia, uses 12060-08-1, Scandium oxide (Sc2O3) 12065-36-0, Germanium nitride ge3n4 12136-91-3, Phosphorus nitride p3n5 12169-03-8, Lithium yttrium oxide liyo2 12209-15-3, Lithium scandium oxide lisco2 12232-41-6, Beryllium **lithium oxide** Be2Li2O3 12355-58-7, Aluminum **lithium oxide** alli5o4 12384-10-0, Lithium zirconium oxide li8zro6 12408-97-8, Boron lithium nitride BLi3N2 12521-45-8, Lithium silicon nitride LiSi2N3 12521-55-0, Lithium silicon nitride Li2SiN2 12521-66-3, Lithium silicon nitride Li8SiN4 13453-69-5, Lithium borate libo2 13453-84-4, Lithium **silicon oxide** li4sio4 13478-14-3, Lithium arsenate 14024-11-4, Aluminum lithium chloride AlLiCl4 14283-07-9, Lithium tetrafluoroborate 15138-76-8, Lithium tetrafluoroaluminate 17739-47-8, Phosphorus nitride pn 19497-94-0, Aluminum lithium silicate allisio4 21324-40-3, Lithium hexafluorophosphate 24304-00-5, Aluminum nitride Aln 25322-68-3, Polyethylene oxide 25658-42-8, Zirconium nitride (ZrN) 25764-13-0, Yttrium nitride (YN) 26134-62-3, Lithium nitride li3n 30622-39-0, LIthium titanium phosphate LiTi2(PO4)3 39300-70-4, Lithium nickel oxide 39449-52-0, **Lithium oxide** silicate (Li8O2(SiO4)) 39457-42-6, Lithium manganese oxide 56320-64-0 57349-02-7, Cerium **lithium oxide** celio2 60883-88-7, Lithium phosphorus nitride LiPN2 61027-73-4, Aluminum lithium nitride AlLi3N2 62795-18-0 66581-07-5 66581-08-6 67181-65-1, Lithium silicon nitride Li5SiN3 76068-31-0 87796-15-4, Lithium scandium phosphate Li3Sc2(PO4)3 101993-97-9, **Lithium phosphate** silicate Li3.6(PO4)0.4(SiO4)0.6 111706-40-2, Cobalt **lithium oxide** CoLi0-1O2 113957-82-7, Lithium silicon nitride Li21Si3N11 113957-83-8, Lithium silicon nitride Li18Si3N10 143080-25-5, Phosphorus nitride oxide p4n6o 170171-06-9, Aluminum lithium fluoride AlLiF4 184905-46-2, Lithium nitrogen phosphorus oxide 651045-58-8, Lithium nitrogen phosphorus tin oxide
RL: DEV (Device component use); USES (Uses)
(apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)

IT 7446-07-3, Tellurium oxide 7446-08-4, Selenium oxide seo2 7782-49-2, Selenium, processes 12031-80-0, **Lithium oxide** li2o2

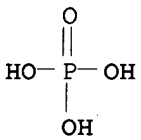
12142-83-5, Tin nitride Sn3N4 12188-25-9, Lithium tin oxide li2sno3
12286-33-8, Tin phosphide Sn4P3 12344-15-9, Lithium tin oxide li8sno6
12372-55-3 12640-89-0, Selenium oxide 13451-18-8, Tellurium oxide teo3
13494-80-9, Tellurium, processes 13762-75-9, Lithium metaphosphate
13843-41-9, Lithium pyrophosphate 15578-26-4, Tin phosphate Sn2P2O7
15578-32-2, Tin phosphate Sn3(PO4)2 18282-10-5, Tin dioxide
23369-45-1, Phosphorus nitride oxide pno 25324-56-5, Tin phosphide SnP
37221-29-7, Sulfur nitride 37367-13-8, Tin phosphide SnP3 50645-72-2,
Lithium tin phosphide Li5SnP3 50645-73-3, Lithium tin phosphide Li8SnP4
53680-59-4 102055-50-5, Lithium silicon nitride 116301-91-8,
Phosphorous acid, trilithium salt 161286-52-8, Lithium sulfide
thiosilicate (Li1.2S0.2(SiS3)0.4) 651045-60-2, Lithium phosphide
(Li0-3P) 651045-62-4, Lithium nitride phosphide (Li10N10P)
651045-64-6, Lithium metaphosphate nitrate oxide
(Li2.88(PO3)(NO3)0.14O0.31)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(sputter target; apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)

IT **7631-86-9, Silica**, uses **10377-52-3, LIthium phosphate 12057-24-8**, Lithia, uses
RL: DEV (Device component use); USES (Uses)
(apparatus and method for fracture absorption layer for use in fabrication of thin-film electrochem. devices)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

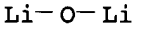


RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



RE.CNT 26 THERE ARE 26 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 12 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:57289 HCAPLUS
DN 140:96902
TI Procedure for the fabrication of rechargeable lithium polymer batteries

IN Naarmann, Herbert; Kruger, Franz Josef
PA Dilo Trading A.-G., Switz.
SO Ger. Offen., 11 pp.
CODEN: GWXXBX
DT Patent
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10231319	A1	20040122	DE 2002-10231319	20020711
	WO 2004008559	A2	20040122	WO 2003-EP7517	20030710
	WO 2004008559	A3	20050303		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1559155	A2	20050803	EP 2003-763813	20030710
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRAI	DE 2002-10231319	A	20020711		
	WO 2003-EP7517	W	20030710		

AB Li polymer batteries were fabricated by a special procedure, new concepts, and with new components. The battery consists of anode, cathode and polymer **electrolyte** as separator, whereby the active masses are degassed and the used graphites for the anode masses were preferably modified by reaction with metal alkyls (e.g., with LiBu). The procedure according to invention is based on the coating and extrusion technol. with which all necessary components for the resp. electrodes and the separator are present as brushable, coatable and/or extrudable mixts. with solvent, conducting salt, additives and the active components (Li intercalating carbon or Li intercalating heavy metal oxides) and are processed during a continuous, preferably single-stage process, whereby monomers are polymerized and solidified. The mixts. are dispersions and/or brushable pastes, which are applied at room temperature on the collector (e.g. Cu film), coated with the anode mass (15-40 μm), then with the separator, the cathode mass applied (15-40 μm) and finally cathode grid aluminum film. The developed connector system is laminated and wound, and encapsulated.

IC ICM H01M010-02
ICS H01M004-36; H01M004-62
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
IT 109-72-8, Lithium butyl, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); **PROC (Process)**
(procedure for fabrication of rechargeable lithium polymer batteries)
IT 463-79-6D, Carbonic acid, alkyl salt 1321-74-0, Divinylbenzene, uses 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9011-17-0, Kynar 2801 9033-83-4, Polyphenylene 11126-15-1, Lithium vanadium oxide 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 25067-58-7, Polyacetylene 30604-81-0, Polypyrrole 37296-91-6, Lithium molybdenum oxide 37349-20-5, Lithium **tungsten oxide**
39300-70-4, Lithium nickel oxide 39302-37-9, Lithium titanium oxide

39457-42-6, Lithium manganese oxide 51177-06-1, Chromium **lithium oxide** 51222-70-9, Lithium zirconium oxide 52627-24-4, Cobalt **lithium oxide**
RL: DEV (Device component use); USES (Uses)
(procedure for fabrication of rechargeable lithium polymer batteries)

IT 1304-28-5, Baria, uses 1309-48-4, Magnesia, uses 1318-00-9, Vermiculite 1344-28-1, Alumina, uses **7631-86-9**, **Silica**, uses 9002-88-4, Polyethylene 9003-29-6, Polybutene 9003-55-8, Styrene-butadiene copolymer 12627-14-4, Lithium silicate 13453-69-5, Lithium metaborate 18115-70-3, Lithium acetylacetonate, uses 24968-97-6, Polypyrrolidone
RL: MOA (Modifier or additive use); USES (Uses)
(procedure for fabrication of rechargeable lithium polymer batteries)

IT **7631-86-9**, **Silica**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(procedure for fabrication of rechargeable lithium polymer batteries)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L52 ANSWER 13 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:989971 HCAPLUS
DN 140:29518
TI All solid state battery
IN Iwamoto, Kazuya; Ito, Shuji
PA Matsushita Electric Industrial Co., Ltd., Japan
SO U.S. Pat. Appl. Publ., 12 pp.
CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

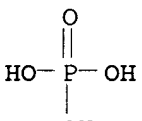
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003232248	A1	20031218	US 2003-458372	20030611
	JP 2004022250	A2	20040122	JP 2002-173349	20020613
	CN 1471187	A	20040128	CN 2003-143034	20030613
PRAI	JP 2002-173349	A	20020613		

AB An all solid state battery comprises: (a) a pos. electrode current collector layer, (b) a pos. electrode active material layer carried on the pos. electrode current collector layer, (c) a neg. electrode current collector layer, (d) a neg. electrode active material layer carried on the neg. electrode current collector layer, (e) a **solid electrolyte** layer interposed between the pos. and neg. electrode active material layers, and (f) a substrate carrying either of the pos. and neg. electrode current collector layers, the substrate comprising a metal sheet and a coating layer covering the surface of the metal sheet, the coating layer comprising at least one metal nitride layer.

IC ICM H01M004-66
INCL 429233000; 429245000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

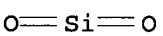
IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-06-4, Platinum, uses 7440-50-8, Copper, uses 12597-68-1, Stainless steel, uses 52627-24-4, Cobalt **lithium oxide**
RL: DEV (Device component use); USES (Uses)
(all solid state battery)

IT **10377-52-3, Lithium phosphate** 12136-58-2,
Lithium sulfide (Li2S) 13759-10-9, Silicon sulfide sis2
RL: DEV (Device component use); USES (Uses)
(glass; all solid state battery)
IT 1304-56-9, Beryllium oxide, uses 1314-23-4, Zirconia, uses 1344-28-1,
Alumina, uses **7631-86-9, Silica**, uses 10043-11-5,
Boron nitride, uses 11105-01-4, Silicon oxynitride 11116-16-8,
Titanium nitride 12033-89-5, Silicon nitride, uses 12633-97-5,
Aluminum oxynitride 13463-67-7, Titanium oxide, uses 24304-00-5,
Aluminum nitride 37311-45-8, Zirconium oxynitride 119173-61-4,
Zirconium nitride
RL: TEM (Technical or engineered material use); USES (Uses)
(layer; all solid state battery)
IT **10377-52-3, Lithium phosphate**
RL: DEV (Device component use); USES (Uses)
(glass; all solid state battery)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

IT **7631-86-9, Silica**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(layer; all solid state battery)
RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 14 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:306576 HCAPLUS
DN 139:182767
TI **Li3PO4**:N/LiCoO2 coatings for thin film batteries
AU Gross, M. E.; Martin, P. M.; Stewart, D. C.; Johnston, J. W.; Windisch, C. F.; Graff, G. L.; Rissmiller, P. L.; Dudeck, E. L.
CS Pacific Northwest National Laboratory, Richland, WA, USA
SO Annual Technical Conference Proceedings - Society of Vacuum Coaters (2002), 45th, 119-124
CODEN: ATCCDI; ISSN: 0731-1699
PB Society of Vacuum Coaters
DT Journal
LA English
AB **Li3PO4**:N (LIPON)/Li1.04CoO2 thin film battery structures were deposited up to 2 μm thick were deposited using a 15.2 cm diameter Li2.9PO3.5 pressed powder target for reactive RF magnetron sputtering. Li1.04CoO2 thin films were deposited using a 15.2 cm diameter LiCoO2 pressed powder target. LIPON films were deposited in an ultra pure N2 atmosphere

and LiCoO2 films were deposited in an ultra pure atmospheric of Ar + O2. Total chamber pressure during deposition ranged between 5 and 20 mtorr and RF power to the sputtering targets ranged from 100 W to 450 W. Because XPS gave ambiguous compositional results, the films were optimized for a.c. and d.c. conductivity Elec. conductivity was extremely sensitive to deposition conditions, deposition rate, sputtering gas pressure, and reactive gas partial pressure. AC conductivity measurements were made at a frequency of 10 kHz, and were correlated to d.c. conductivity measurements. LIPON films had the highest conductivities in the 660 nS cm-1 range and the highest a.c. conductivity of Li1.04CoO2 films was .apprx.0.24 S cm-1. Earlier work showed the most conductive films were deposited at 20 mtorr pressures and target powers of 100 W. This work has scaled up to conductive films being deposited at 7.5 mtorr pressures and target powers of 400 W. X-ray diffraction anal. showed that the films were mostly amorphous. Films deposited under these conditions were transparent at visible wavelengths with a refractive index of 1.6. Lower conductivity films were brownish in appearance and had less transmission than films with high conductivity The rechargeable battery structure consisting of an alumina substrate, gold current collector, 0.5-μm Li1.04CoO2 cathode, 1.2-μm LIPON **electrolyte**, Li metal anode, and a copper current collector are currently under test. Early thin film battery cycle testing was successful, addnl. testing is on-going. Performance results are correlated with film properties and reported. Future work will involve optimization of battery performance on a large scale and scale up of the deposition process to include flexible web processing.

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57

ST **Li3PO4** LiCoO2 coating thin film reactive RF magnetron sputtering; XRD secondary lithium battery **electrolyte** electrode cond SEM voltammetry

IT Battery electrodes
Battery **electrolytes**
Cyclic voltammetry
Electric conductivity
Electric impedance
Secondary batteries
(**Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

IT Ceramics
(coated substrate; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

IT Polyimides, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); **PROC (Process)**; USES (Uses)
(coated substrate; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

IT Glass, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); **PROC (Process)**; USES (Uses)
(gold-coated, coated substrate; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

IT Reactive sputtering
(radio-frequency, magnetron; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

IT Magnetron sputtering
(radio-frequency, reactive; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

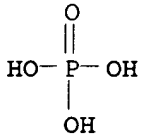
IT Crystal structure
(rhombohedral (LiCoO2 film); **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)

IT 203402-92-0P, Lithium nitride phosphate
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(LIPON, sputtered layer; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 7727-37-9, Nitrogen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(**Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 7439-93-2, Lithium, uses 12142-83-5, Tin nitride (Sn3N4)
RL: DEV (Device component use); USES (Uses)
(anode; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 1344-28-1, Alumina, uses 7440-32-6, Titanium, uses 60676-86-0, Fused **silica**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); **PROC (Process)**; USES (Uses)
(coated substrate; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(foil; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 7440-50-8, Copper, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); **PROC (Process)**; USES (Uses)
(gold-coated, coated substrate, and anode; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 12190-79-3, Cobalt **lithium oxide** (CoLiO2)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); **PROC (Process)**
(pressed powder target; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 581094-51-1, Lithium metaphosphate oxide (Li2.9(PO3)O0.5)
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PYP (Physical process); **PROC (Process)**
(pressed powder target; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 152829-46-4P, Cobalt **lithium oxide** (CoLi1.04O2)
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(sputtered layer, cathode; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
IT 7440-57-5, Gold, uses
RL: DEV (Device component use); USES (Uses)
(substrate coating; **Li3PO4**:N/LiCoO2 coatings for thin film secondary batteries)
RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 15 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:560645 HCAPLUS
DN 138:6368
TI All Solid-State Li/LixMnO2 Polymer Battery Using Ceramic Modified Polymer **Electrolytes**
AU Wang, Congxiao; Xia, Yongyao; Koumoto, Kenichi; Sakai, Tetsuo
CS National Institute of Advanced Industrial Science and Technology Kansai Collaboration Center, Research Team of Secondary Battery System, Ikeda, Osaka, 563-8577, Japan
SO Journal of the Electrochemical Society (2002), 149(8), A967-A972
CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society
DT Journal
LA English
AB The addition of ceramics to a polymer **electrolyte** increases its ionic conductivity, especially at temps. below the crystalline-amorphous transition temperature which is at 60°. The electrochem. profile of an all-solid state Li/LixMnO2 polymer battery with ceramic-modified and ceramic-free poly(ethylene oxide) (PEO)-LiClO4 **electrolyte**, was studied. The addition of ceramics, e.g., metal oxides, can suppress the decomposition of PEO thus increasing the charge/discharge efficiency upon cycling of such a battery. This improvement is due to the fact that the metal oxide additive promotes a stable interaction between the ceramic and the PEO segment, thus stabilizing the PEO structure and protecting the PEO from oxidation
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 57
ST lithium battery ceramic modifier polyethylene oxide **electrolyte**
IT Secondary batteries
(lithium; solid-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
IT Battery **electrolytes**
Ceramics
(**solid**-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(solid-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
IT 25322-68-3, Poly(ethylene oxide)
RL: DEV (Device component use); USES (Uses)
(solid-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
IT 1314-23-4, Zirconium oxide (ZrO2), uses 1314-36-9, Yttrium oxide (Y2O3), uses 1344-28-1, Alumina, uses **7631-86-9**, **Silica**, uses 10102-24-6, Lithium metasilicate (Li2SiO3) **10377-52-3**, **Lithium phosphate (Li3PO4)** 12007-60-2, Lithium borate (Li2B4O7) 12031-82-2, Lithium titanium oxide (Li2TiO3) 12031-83-3, Lithium zirconate (Li2ZrO3) 12047-27-7, Barium titanate (BaTiO3), uses 12049-50-2, Calcium titanate (CaTiO3) 12060-00-3, Lead titanium oxide (PbTiO3) 12060-59-2, Strontium titanate (SrTiO3) 13453-69-5, Lithium borate (LiBO2) 13463-67-7, Titanium oxide (TiO2), uses 158211-12-2, Lanthanum lithium titanium oxide (LaLiTiO3)
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(solid-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
IT 12003-67-7, Aluminum **lithium oxide** (LiAlO2)
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(γ-; solid-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
IT **7631-86-9**, **Silica**, uses **10377-52-3**, **Lithium phosphate (Li3PO4)**
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(solid-state Li/LixMnO2 polymer battery using ceramic-modified polymer **electrolytes**)
RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)

●3 Li

RE.CNT 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 16 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:840565 HCAPLUS
DN 135:360245
TI Crystallization of lithium-transition metal oxide thin film for secondary lithium battery
IN Lee, Jai Yon; Kan, Youn Son; Lee, Ho; Park, Soon Chul; Kan, Yon Mok
PA Korea Advanced Institute of Science and Technology, S. Korea
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001316817	A2	20011116	JP 2000-333625	20001031
	JP 3486166	B2	20040113		
	US 6376027	B1	20020423	US 2000-688987	20001017
PRAI	KR 2000-23286	A	20000501		

AB Li-transition metal oxide thin films for cathodes of Li batteries are formed on substrates by vapor deposition, and the films are processed with plasma. The oxide shows good crystallinity after plasma treatment, and the battery using it shows good cycling performance.

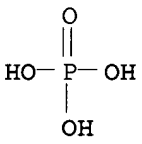
IC C23C014-58; H01M004-04
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 75, 76
IT 1314-62-1, Vanadium oxide (V2O5), uses **10377-52-3**, **Lithium phosphate (Li3PO4)** 12024-01-0, Gallium **lithium oxide** (GaLiO2) 12031-65-1, Lithium nickel oxide (LiNiO2) 12037-42-2, Vanadium oxide (V6O13) 12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12057-19-1, Lithium titanium oxide (LiTiO2) 12190-79-3, Cobalt **lithium oxide** (CoLiO2) 12798-95-7 18282-10-5, Tin oxide (SnO2)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); **PROC (Process)**; USES (Uses)

(crystallization of Li-transition metal oxide thin film by plasma processing for Li battery cathode)

IT 7440-06-4, Platinum, uses 7440-32-6, Titanium, uses **7631-86-9, Silica**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(multilayer substrate; crystallization of Li-transition metal oxide thin film by plasma processing for Li battery cathode)

IT **10377-52-3, Lithium phosphate (Li3PO4)**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); **PROC (Process)**; USES (Uses)
(crystallization of Li-transition metal oxide thin film by plasma processing for Li battery cathode)

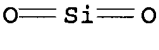
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

IT **7631-86-9, Silica**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(multilayer substrate; crystallization of Li-transition metal oxide thin film by plasma processing for Li battery cathode)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 17 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:388982 HCAPLUS
DN 134:369461
TI Coin-type secondary nonaqueous-**electrolyte** lithium battery having high resistance to reflow soldering
IN Takasugi, Shinichi; Harada, Toyoo; Sakai, Tsugio
PA Seiko Instruments, Inc., Japan; Sii Microparts Ltd.
SO Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001148242	A2	20010529	JP 1999-346275	19991206
	JP 3703667	B2	20051005		
	US 6489062	B1	20021203	US 1999-465078	19991216
PRAI	JP 1998-367884	A	19981224		
	JP 1999-254920	A	19990908		
	JP 1998-367881	A	19981224		

JP 1998-367882 A 19981224

AB The battery has electrodes comprising active mass, elec. conductor, and organic binder, heat-resistant **electrolyte** solution, heat-resistant separator, and heat-resistant gasket, and so on. In the battery, the cathode and/or anode are heat-treated at 200-450° for suppression of their deterioration. The battery has high heat resistance at reflow temperature, and it is useful for being mounted on printed circuit board.

IC ICM H01M004-04
ICS H01M002-08; H01M004-02; H01M004-48; H01M004-58; H01M004-62; H01M010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST heat resistance coin nonaq **electrolyte** lithium battery; electrode heat treatment lithium battery reflow soldering resistance

IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(aromatic, gasket; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Battery anodes
Battery cathodes
Battery **electrolytes**
Heat treatment
Heat-resistant materials
Secondary battery separators
(coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Carbon black, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(elec. conductor in cathode; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Fluoropolymers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(electrode binder, separator; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Polyamides, uses
Polyesters, uses
Polyimides, uses
Polythiophenylenes
RL: DEV (Device component use); USES (Uses)
(gasket; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Polyketones
RL: DEV (Device component use); USES (Uses)
(polyether-, gasket; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polyketone-, gasket; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Soldering
(reflow; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT Glass fibers, uses
RL: DEV (Device component use); USES (Uses)
(separator; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(activated, cathode active mass; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT **7631-86-9, Silica**, uses 12031-95-7, Lithium titanium oxide (Li4Ti5O12) 18868-43-4, Molybdenum oxide (MoO2) 21651-19-4, Tin oxide (SnO)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(anode active mass; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 7439-93-2, Lithium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(anode intercalated with; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 1313-13-9, Manganese oxide (MnO2), uses 1313-27-5, Molybdenum oxide (MoO3), uses **1313-96-8, Niobium oxide (Nb2O5)** 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12057-19-1, Lithium titanium oxide (LiTiO2) 12190-79-3, Cobalt **lithium oxide** (CoLiO2) 101920-93-8, Cobalt lithium nickel oxide (Co0.5LiNi0.5O2) 158263-50-4, Lithium titanium oxide (Li1.33Ti1.66O4) 213692-55-8, Lithium manganese oxide (Li0.36MnO2.43)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(cathode active mass; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 340700-92-7, Molybdenum oxide (MoO2.71)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(cathode and anode active mass; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(elec. conductor in cathode; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 9002-84-0, Tetrafluoroethene homopolymer
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(electrode binder, separator; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 9003-01-4, Acrylic acid homopolymer
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(electrode binder; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solution; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow

soldering)
IT 25038-59-9, Polyethylene terephthalate, uses 25212-74-2, Poly(p-phenylene sulfide)
RL: DEV (Device component use); USES (Uses)
(gasket; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)
IT **7631-86-9, Silica**, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(anode active mass; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)
RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

IT **1313-96-8, Niobium oxide (Nb2O5)**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); **PROC (Process)**; USES (Uses)
(cathode active mass; coin-type nonaq.-**electrolyte** Li battery having heat-treated electrodes for high resistance to reflow soldering)
RN 1313-96-8 HCAPLUS
CN Niobium oxide (Nb2O5) (8CI, 9CI) (CA INDEX NAME)

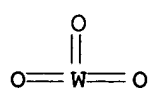
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 18 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2001:195122 HCAPLUS
DN 134:210600
TI **Solid electrolyte** for an electrochemical cell composed of an inorganic metal oxide network encapsulating a liquid **electrolyte**
IN Ehrlich, Grant M.
PA Yardney Technical Products, Inc., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 6203949	B1	20010320	US 1998-137492	19980821
	US 2001012590	A1	20010809	US 2001-808794	20010315
	US 6599664	B2	20030729		
	US 2001010881	A1	20010802	US 2001-810297	20010316
	US 6558850	B2	20030506		
PRAI	US 1997-56740P	P	19970822		
	US 1998-137492	A2	19980821		

AB A **solid** polymer **electrolyte** for an electrochem. cell is prepared by a sol-gel process in which an active metal ion conducting liquid **electrolyte**, e.g. a lithium-ion **electrolyte**, containing a salt which is stable in the presence of water, e.g. lithium bisperfluoroethanesulfonimide, is admixed in aqueous solution with an alkoxide, e.g. **silica** alkoxide, to form a liquid precursor which is added to the electrochem. cell between the anode and cathode thereof and allowed to solidify in situ to form the **solid electrolyte.**
IC ICM H01M006-18
INCL 429304000

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST battery polymer **electrolyte** inorg metal oxide network
IT Transition metal oxides
RL: DEV (Device component use); USES (Uses)
(lithiated; **solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT Secondary batteries
(lithium; **solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT Battery **electrolytes**
Sol-gel processing
(**solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT Alkali metal salts
Alkaline earth salts
RL: DEV (Device component use); USES (Uses)
(**solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT 7647-01-0, Hydrochloric acid, uses
RL: CAT (Catalyst use); USES (Uses)
(**solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 115-10-6, Dimethyl ether 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate **1314-35-8**, **Tungsten oxide**, uses 1344-28-1, Alumina, uses 7440-44-0, Carbon, uses **7631-86-9**, **Silica**, uses 11098-99-0, Molybdenum oxide 11099-11-9, Vanadium oxide 11118-57-3, Chromium oxide 12190-79-3, Cobalt **lithium oxide** colio2 13463-67-7, Titanium oxide, uses 56525-42-9, Methyl propyl carbonate 61852-37-7, Lithium bis(trifluoromethanesulfonyl)methane 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide 132404-42-3, Lithium tris(trifluoromethanesulfonyl)methide 201536-28-9 228717-85-9
RL: DEV (Device component use); USES (Uses)
(**solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT 681-84-5, Tetramethylorthosilicate
RL: RCT (Reactant); RACT (Reactant or reagent)
(**solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
IT **1314-35-8**, **Tungsten oxide**, uses
7631-86-9, **Silica**, uses
RL: DEV (Device component use); USES (Uses)
(**solid electrolyte** for electrochem. cell composed of inorg. metal oxide network encapsulating liquid **electrolyte**)
RN 1314-35-8 HCAPLUS
CN Tungsten oxide (WO3) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 19 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:189299 HCAPLUS
DN 130:184879
TI Molded **solid electrolytes**, molded electrodes, and electrochemical elements
IN Takada, Kazunori; Iwamoto, Kazuya; Kondo, Shigeo; Yasuda, Naoshi; Masaka, Fusazumi; Takeuchi, Yasumasa
PA Matsushita Electric Industrial Co., Ltd., Japan; JSR Corporation
SO PCT Int. Appl., 96 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9912221	A1	19990311	WO 1998-JP3912	19980831
	W: US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 11086899	A2	19990330	JP 1997-238705	19970903
	JP 3655443	B2	20050602		
	EP 977296	A1	20000202	EP 1998-940665	19980831
	R: DE, FR, GB				
	US 6200707	B1	20010313	US 1999-297478	19990430
PRAI	JP 1997-238705	A	19970903		
	WO 1998-JP3912	W	19980831		

AB The molded **electrolytes** contain a **solid electrolyte** and a hydrogenated copolymer, containing 5-70% polybutadiene blocks, having ≤15% 1,2-vinyl bonding, and 30-95% blocks of polybutadiene or butadiene-(0-50%) other monomer copolymer, having 20-90% 1,2 vinyl bonding in the butadiene part. The electrodes contain an electrode active mass and the above described block copolymer. The electrochem. elements, e.g., batteries have an electrode pair and an **electrolyte** layer, where the electrodes and/or the **electrolyte** contain the block copolymer.
IC ICM H01M010-36
ICS H01M004-62
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST hydrogenated butadiene polymer **solid electrolyte**; electrode hydrogenated butadiene polymer; battery hydrogenated butadiene polymer
IT Battery electrodes
Battery **electrolytes**
Binders
(hydrogenated butadiene polymers for electrodes and **solid electrolytes** in secondary lithium batteries)
IT 9003-17-2D, Polybutadiene, hydrogenated 9003-55-8D, Butadiene-styrene copolymer, hydrogenated
RL: DEV (Device component use); USES (Uses)
(hydrogenated butadiene polymers for electrodes and **solid electrolytes** in secondary lithium batteries)
IT 7782-42-5, Graphite, uses 12031-65-1, Lithium nickel oxide (LiNiO2)

12039-13-3, Titanium sulfide (TiS2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Cobalt **lithium oxide** (CoLiO2)
RL: DEV (Device component use); USES (Uses)
(hydrogenated butadiene polymers for electrodes in secondary lithium batteries)

IT **7631-86-9**, **Silica**, uses 7664-38-2, Phosphoric acid, uses
RL: DEV (Device component use); USES (Uses)
(hydrogenated butadiene polymers for phosphoric acid doped **silica electrolytes** in batteries)

IT 120479-61-0, Aluminum lithium titanium phosphate [Al0.3Li1.3Ti1.7(PO4)3]
RL: DEV (Device component use); USES (Uses)
(hydrogenated butadiene polymers for **solid electrolytes** in batteries)

IT 108-32-7, Propylene carbonate 110-71-4 7791-03-9, Lithium perchlorate 39390-08-4, Silver iodide tungstate (Ag6I4WO4) 126901-01-7 161286-52-8, Lithium sulfide thiosilicate (Li1.2S0.2(SiS3)0.4) 161487-41-8, Lithium iodide thiosilicate (LiI0.3(SiS3)0.35) 185211-51-2, Lithium sulfide thioborate (Li6S(BS2)4) 220682-59-7, **Lithium phosphate** sulfide thiosilicate (Li1.29(PO4)0.01S0.22(SiS3)0.36) 220682-60-0, **Lithium oxide** sulfide thiosilicate (Li1.3O0.05S0.25(SiS3)0.35)
RL: DEV (Device component use); USES (Uses)
(hydrogenated butadiene polymers for **solid electrolytes** in secondary lithium batteries)

IT **7631-86-9**, **Silica**, uses
RL: DEV (Device component use); USES (Uses)
(hydrogenated butadiene polymers for phosphoric acid doped **silica electrolytes** in batteries)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L52 ANSWER 20 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:114405 HCAPLUS
DN 130:184886
TI Lithium batteries with **solid electrolytes** consisting of nonconducting porous polymer film filled with lithium ionic conductors
IN Kamino, Maruo; Fujimoto, Masahisa; Noma, Toshiyuki; Nishio, Koji
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 11045725	A2	19990216	JP 1997-215598	19970725
PRAI JP 1997-215598		19970725		

AB The **solid electrolyte** comprises nonconducting porous polymer film, having its pores filled with 20-65 weight% (based on the total of polymer film and inorg. **electrolyte**) Li ion-conducting inorg. **electrolytes**. Batteries with large discharge capacity and high discharge rate are obtained. Polyethylene was blended with liquid paraffin

and LiTi2(PO4)3, formed into a sheet, and treated with methylene chloride for elution of paraffin to give a porous sheet. The pore of the prepared sheet was laminated on cathode and impregnated with polyethylene glycol methacrylate-LiClO4 and irradiated with electron beam to give a polymer **electrolyte.** A battery obtained using the **electrolyte** showed excellent discharging characteristics.

IC ICM H01M006-18
ICS H01M006-18; C08J009-00; H01M010-40; C08K003-16; C08K003-22; C08K003-28; C08K003-30; C08K003-32; C08K003-34; C08K003-38; C08L101-00

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium battery **solid electrolyte**; nonconducting polymer inorg conductor filler **electrolyte**

IT Porous materials
(films, polymer; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Battery **electrolytes**
(lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Ionic conductors
(lithium; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Acrylic polymers, uses
Fluoropolymers, uses
Polyesters, uses
Polyolefins
RL: DEV (Device component use); USES (Uses)
(nonconducting polymer film; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Films
(porous, polymer; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Polymer **electrolytes**
(**solid electrolyte**; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT 7439-93-2D, Lithium, polyethylene glycol methacrylate complexes, uses
9056-77-3D, Polyethylene glycol methacrylate, lithium complexes
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(Li ionic conductor; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

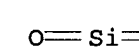
IT 9002-88-4, Polyethylene
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(nonconducting polymer film; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

IT 1303-86-2, Boria, uses 1310-65-2, Lithium hydroxide 1314-34-7, Vanadium oxide (V2O3) 1314-56-3, Phosphorus oxide (P2O5), uses **7631-86-9, Silica**, uses 10377-51-2, Lithium iodide 12007-33-9, Boron sulfide (B2S3) 12031-66-2, Lithium **tantalum oxide** (LiTaO3) **12057-24-8, Lithium oxide** (Li2O), uses 12136-58-2, Lithium sulfide (Li2S) 26134-62-3, Trilithium nitride 30622-39-0, Lithium titanium phosphate (LiTi2(PO4)3) 37220-89-6, Lithium β-alumina
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); **PROC (Process)**; USES (Uses)
(**solid electrolyte**; lithium battery

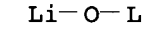
electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors)

IT **7631-86-9, Silica**, uses **12057-24-8, Lithium oxide** (Li2O), uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); **PROC (Process)**; USES (Uses)
(**solid electrolyte**; lithium battery **electrolytes** comprising nonconducting porous polymer films filled with Li ionic conductors)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 21 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:673743 HCAPLUS
DN 125:346517
TI Glass oxide composition, **solid electrolyte**, and gas sensor
IN Shindo, Kyotaka
PA Mitsui Petrochemical Industries, Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08239218	A2	19960917	JP 1995-66896	19950301
PRAI JP 1995-66896		19950301		

AB The **electrolyte** comprises the composition consisting of (Li2O)x-(**SiO2**)y-Mz (M = **Nb2O5**, **Ta2O5**, and/or **WO3**; x + y + z = 1). The gas sensor contains the **electrolyte.** An obtained glass **electrolyte** showed good stability and high ionic conductivity

IC ICM C01G033-00
ICS C01G035-00; C01G041-00; G01N027-416; G02F001-15; H01M006-18
CC 79-2 (Inorganic Analytical Chemistry)
Section cross-reference(s): 57, **72**, 76
ST lithium silicate glass **electrolyte** gas sensor; niobium lithium silicate glass **electrolyte** sensor; tantalum lithium silicate glass **electrolyte** sensor; tungsten lithium silicate glass **electrolyte** sensor; ionic conductor lithium silicate glass
IT Electric conductors, glass
(lithium silicate glass **solid electrolyte** with high ionic conductivity for gas sensor)
IT Sensors
(gas, lithium silicate glass **solid electrolyte** with high ionic conductivity for gas sensor)
IT Glass, oxide

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(lithium silicate, lithium silicate glass **solid electrolyte** with high ionic conductivity for gas sensor)

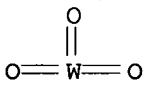
IT **1313-96-8, Niobium oxide (Nb2O5)**
1314-35-8, Tungsten oxide (WO3),
uses **1314-61-0, Tantalum oxide (Ta2O5)** **7631-86-9, Silica**, uses
12057-24-8, Lithium oxide, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(glass component; lithium silicate glass **solid electrolyte** with high ionic conductivity for gas sensor)

IT **1313-96-8, Niobium oxide (Nb2O5)**
1314-35-8, Tungsten oxide (WO3),
uses **1314-61-0, Tantalum oxide (Ta2O5)** **7631-86-9, Silica**, uses
12057-24-8, Lithium oxide, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(glass component; lithium silicate glass **solid electrolyte** with high ionic conductivity for gas sensor)

RN 1313-96-8 HCAPLUS
CN Niobium oxide (Nb2O5) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

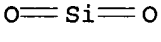
RN 1314-35-8 HCAPLUS
CN Tungsten oxide (WO3) (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



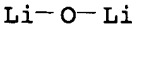
RN 1314-61-0 HCAPLUS
CN Tantalum oxide (Ta2O5) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 22 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:569403 HCAPLUS
DN 125:200870
TI Secondary solid lithium batteries with improved **electrolytes**
IN Iwamoto, Kazuya; Aotani, Noboru; Takada, Kazunori; Kondo, Shigeo
PA Matsushita Electric Ind Co Ltd, Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 08195219	A2	19960730	JP 1995-221366	19950830
PRAI	JP 1995-221366	A	19950830		
	JP 1994-279174		19941114		

AB The batteries use anodes and/or cathodes from 3.0:7.0-9.5:0.5 (weight ratio) mixts. of the active mass having average diameter 0.1-50 μm and **solid electrolytes** having average diameter 0.1-50 μm, preferably which are Li ion-conducting amorphous sulfide-based **electrolytes.** Alternatively, the batteries use anodes and/or cathodes containing (1) Li ion-conducting amorphous sulfide-based **solid electrolytes**, and (2) Co Li oxides having average diameter 5-50 μm, preferably which are manufactured from Co oxide (preferably Co3O4) and Li compds. at a mixing ratio of Co/Li <1.0. The anodes and/or cathodes may contain the Co Li oxides and the **electrolytes** at a weight ratio of oxide:**electrolyte** 4.0:6.0-9.5:0.5.

IC ICM H01M010-36
ICS H01M004-02
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST battery **electrolyte** sulfide glass; cobalt **lithium oxide** battery cathode

IT Battery **electrolytes**
(battery **electrolytes** from size-controlled sulfide-based glass contained in anodes or cathodes)

IT Glass, nonoxide
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(sulfide, battery **electrolytes** from size-controlled sulfide-based glass contained in anodes or cathodes)

IT 554-13-2, Lithium carbonate 1308-06-1, Cobalt oxide (Co3O4)
RL: PEP (Physical, engineering or chemical process); **PROC (Process)**
(anodes from; battery **electrolytes** from sized-controlled sulfide-based glass contained in anodes or cathodes)

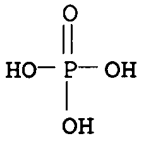
IT 12136-58-2, Lithium sulfide 13759-10-9, Silicon sulfide (SiS2) 140435-84-3, Phosphorus sulfide (P2S5)
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(battery **electrolytes** from sized-controlled sulfide-based glass contained in anodes or cathodes)

IT 7782-42-5, Graphite, uses 12031-65-1, Lithium nickel oxide (LiNiO2) 12039-13-3, Titanium disulfide
RL: DEV (Device component use); USES (Uses)
(cathodes; battery **electrolytes** from sized-controlled sulfide-based glass contained in anodes or cathodes)

IT 12190-79-3P, Cobalt **lithium oxide** (CoLiO2)
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(cathodes; battery **electrolytes** from sized-controlled sulfide-based glass contained in anodes or cathodes)

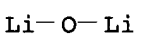
IT **10377-52-3, Lithium phosphate 12057-24-8, Lithium oxide**, uses 178958-56-0, Lithium **silicon oxide**
RL: MOA (Modifier or additive use); USES (Uses)
(glass component; battery **electrolytes** from sized-controlled sulfide-based glass contained in anodes or cathodes)

IT **10377-52-3, Lithium phosphate**
12057-24-8, Lithium oxide, uses
RL: MOA (Modifier or additive use); USES (Uses)
(glass component; battery **electrolytes** from sized-controlled sulfide-based glass contained in anodes or cathodes)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



L52 ANSWER 23 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1996:540726 HCAPLUS
DN 125:173394
TI Solid lithium batteries
IN Kondo, Shigeo; Aotani, Noboru; Iwamoto, Kazuya; Takada, Kazunori
PA Matsushita Electric Ind Co Ltd, Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 08185887	A2	19960716	JP 1994-327657	19941228
PRAI JP 1994-327657		19941228		

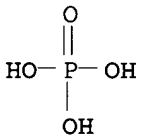
AB The batteries use Li ion-conducting inorg. **solid electrolyte** layers, and battery cases from Al or Al alloys. The **electrolyte** layers may not contain halides, and contain Li2S.
IC ICM H01M010-36
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST aluminum case solid lithium battery; **electrolyte** lithium sulfide **solid** battery
IT Batteries, secondary
Battery **electrolytes**
(**solid** Li battery using Al or Al alloy case and Li-conducting inorg **solid electrolytes**)
IT **10377-52-3, Lithium phosphate** 12025-34-2, Germanium sulfide (GeS2) **12057-24-8, Lithium oxide**, uses 12136-58-2, Lithium sulfide 13453-69-5, Lithium borate (LiBO2) 13453-84-4, Lithium **silicon oxide** (Li4SiO4) 140435-84-3, Phosphorus sulfide (P2S5)

RL: DEV (Device component use); USES (Uses)
(**electrolyte** component; **solid** Li battery using Al or Al alloy case and Li-conducting inorg **solid electrolytes**)

IT 7429-90-5, Aluminum, uses 11106-91-5 11106-93-7 11145-10-1
RL: DEV (Device component use); USES (Uses)
(solid Li battery using Al or Al alloy case and Li-conducting inorg **solid electrolytes**)

IT **10377-52-3**, **Lithium phosphate**
12057-24-8, **Lithium oxide**, uses
RL: DEV (Device component use); USES (Uses)
(**electrolyte** component; **solid** Li battery using Al or Al alloy case and Li-conducting inorg **solid electrolytes**)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)

L52 ANSWER 24 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1993:195141 HCAPLUS
DN 118:195141
TI Lithium batteries
IN Nishio, Koji; Furukawa, Sanehiro
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04315775	A2	19921106	JP 1991-243200	19910924
	JP 3244291	B2	20020107		
PRAI	JP 1991-6076	A1	19910123		

AB The anodes of the title batteries are coated with a **solid electrolyte** buffer layer having decomposition voltage ≥3 V or a glassy **solid electrolyte** layer formed by reaction with Li to prevent reaction between the liquid **electrolytes** and the anodes and deformation of the anodes.

IC ICM H01M010-38
ICS H01M004-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

IT Anodes
(battery, coating of, with **solid electrolyte** buffer or glassy material)

IT 1310-53-8, Germania, uses **1313-96-8, Niobium oxide (nb2o5)** 1314-56-3, Phosphorus oxide (p2o5), uses **1314-61-0, Tantalum oxide (ta2o5)** 1314-62-1, Vanadium oxide, uses 1314-80-3, Phosphorus sulfide (p2s5) 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide **7631-86-9, Silica**, uses 7789-24-4, Lithium fluoride, uses 10377-51-2, Lithium iodide **10377-52-3** 11115-95-0, Lithium **niobium oxide** 12025-11-5, Lithium germanium oxide (li4geo4) **12057-24-8, Lithium oxide**, uses 12136-58-2, Lithium sulfide (li2s) 12769-51-6, Lithium **tantalum oxide** 13453-84-4, Lithium **silicon oxide** (li4sio4) 13568-40-6, Lithium molybdenum oxide (li2moo4) 15593-56-3, Lithium vanadium oxide (li3vo4) 18868-43-4, Molybdenum dioxide
RL: USES (Uses)
(anodes coated with, lithium or lithium alloy, for batteries)

IT **1313-96-8, Niobium oxide (nb2o5)**
1314-61-0, Tantalum oxide (ta2o5)
7631-86-9, Silica, uses **10377-52-3**
12057-24-8, Lithium oxide, uses
RL: USES (Uses)
(anodes coated with, lithium or lithium alloy, for batteries)

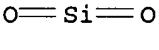
RN 1313-96-8 HCAPLUS
CN Niobium oxide (Nb2O5) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

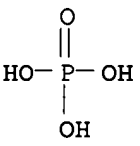
RN 1314-61-0 HCAPLUS
CN Tantalum oxide (Ta2O5) (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)

Li—O—Li

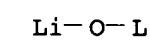
L52 ANSWER 25 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:201588 HCAPLUS
DN 110:201588
TI Apparatus for simultaneous generation of alkali metal species and oxygen gas
IN Sammells, Anthony F.; Semkow, Krystyna W.
PA Eltron Research, Inc., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4804448	A	19890214	US 1987-65962	19870624
PRAI US 1987-65962		19870624		

AB A process and apparatus for electrochem. separating alkali oxides (e.g., Li2O) to simultaneously generate O gas and liquid alkali metals (e.g., Li) in a high-temperature **electrolytic** cell is described. The cell comprises a cathode in contact with an alkali ion-conducting molten salt **electrolyte** separated from the anode by an O vacancy conducting **solid electrolyte.** Alkali metals separated in the alkali metal-reducing half cell reaction are useful as reducing agents in the direct thermochem. refining of lunar metal oxide ores to produce metallic species and alkali oxides, and the alkali oxides may then be recycled to the high temperature **electrolytic** cell.
IC ICM C25C003-02
ICS C25C003-18; C25C007-00
INCL 204243000R
CC 72-9 (**Electrochemistry**)
Section cross-reference(s): 9, 49
IT **Electrolytic** cells
(high-temperature, for simultaneous lithium/oxygen generation)
IT 1306-38-3P, Cerium dioxide, preparation 1313-59-3P, Sodium oxide, preparation 1314-20-1P, Thorium dioxide, preparation 1314-23-4P, Zirconium dioxide, preparation 1314-36-9P, Yttrium oxide, preparation 1314-37-0P, Ytterbium oxide (Yb2O3) 7447-41-8P, Lithium chloride, preparation **7631-86-9P**, Silicon dioxide, preparation 7789-24-4P, Lithium fluoride, preparation **12057-24-8P**, **Lithium oxide**, preparation 12136-45-7P, Potassium oxide, preparation
RL: PREP (Preparation)
(**electrolyte** containing, in high-temperature cells for lithium/oxygen generation)
IT 13774-18-0 35984-07-7, Bismuth pentoxide 59763-75-6, **Tantalum oxide**
RL: PRP (Properties)
(**electrolyte** containing, in high-temperature cells for lithium/oxygen generation)
IT **7631-86-9P**, Silicon dioxide, preparation **12057-24-8P**, **Lithium oxide**, preparation
RL: PREP (Preparation)
(**electrolyte** containing, in high-temperature cells for lithium/oxygen generation)
RN 7631-86-9 HCAPLUS

CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)

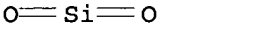


L52 ANSWER 26 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1985:495007 HCAPLUS
DN 103:95007
TI **Solid-electrolyte** battery
PA Hitachi Maxell, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

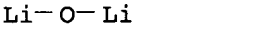
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 60072170	A2	19850424	JP 1983-181416	19830928
PRAI JP 1983-181416		19830928		

AB A thin **solid-electrolyte** battery having a high discharge potential is prepared by the following steps: (1) forming a number of independent conductor films on an insulator substrate; (2) forming power-generating elements consisting of a cathode, **solid-electrolyte** layer and anode on the conductor films in sucha way that portions of the conductor films are exposed; and (3) connecting the power-generating element in series using the exposed portions of the conductor films. Optionally, the power-generating elements may consist of the following: (1) a TiS2 cathode; (2) a Li or its alloy anode; and (3) a **solid electrolyte** of Li4SiO4-**Li3PO4**, Li2O-ZrO2-**SiO2**, LiTaO3, and/or LiGeO4-Li3VO4.
IC ICM H01M006-18
ICS H01M010-36
CC 72-3 (**Electrochemistry**)
ST **solid electrolyte** battery; lithium titanium sulfide battery
IT Batteries, primary
(lithium-titanium sulfide, **solid-electrolyte**)
IT Lithium alloy, base
RL: PRP (Properties)
(anode, in **solid-electrolyte** battery with titanium sulfide)
IT 7439-93-2, uses and miscellaneous
RL: USES (Uses)
(anode, in **solid-electrolyte** battery with titanium sulfide)
IT 12039-13-3
RL: PRP (Properties)
(cathode, in **solid-electrolyte** battery with lithium)
IT 15593-56-3
RL: PRP (Properties)

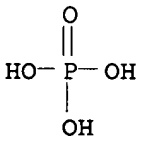
(**solid electrolyte** from lithium germanate and, for lithium-titanium sulfide battery)
IT 1314-23-4, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from **lithium oxide** and **silica** and, for lithium-titanium sulfide battery)
IT **7631-86-9**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from **lithium oxide** and zirconia and, for lithium-titanium sulfide battery)
IT 13453-84-4
RL: PRP (Properties)
(**solid electrolyte** from **lithium phosphate** and, for lithium-titanium sulfide battery)
IT 12025-11-5
RL: PRP (Properties)
(**solid electrolyte** from lithium vanadate and, for lithium-titanium sulfide battery)
IT **12057-24-8**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from **silica** and zirconia and, for lithium-titanium sulfide battery)
IT **10377-52-3**
RL: PRP (Properties)
(**solid electrolyte** from silicate and, for lithium-titanium sulfide battery)
IT 12031-66-2
RL: PRP (Properties)
(**solid electrolyte**, for lithium-titanium sulfide battery)
IT **7631-86-9**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from **lithium oxide** and zirconia and, for lithium-titanium sulfide battery)
RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT **12057-24-8**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from **silica** and zirconia and, for lithium-titanium sulfide battery)
RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)



IT **10377-52-3**
RL: PRP (Properties)
(**solid electrolyte** from silicate and, for lithium-titanium sulfide battery)
RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

L52 ANSWER 27 OF 27 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1985:495006 HCAPLUS
DN 103:95006
TI **Solid-electrolyte** battery
PA Hitachi Maxell, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 60072169	A2	19850424	JP 1983-181415	19830928
PRAI JP 1983-181415		19830928		

AB A thin **solid-electrolyte** battery having a high discharge potential is prepared by applying power-generating elements on both sides of an insulator, in which top and bottom sides are elec. insulated, and connecting the power-generating elements in series. Optionally, the power-generating elements may consist of the following: (1) a TiS2 cathode; (2) a Li or Li alloy anode; and (3) a **solid electrolyte** of Li4SiO4-**Li3PO4**, Li2O-ZrO2-**SiO2**, LiTaO3, and/or Li4GeO4-Li3VO4.
IC ICM H01M006-18
ICS H01M010-36
CC 72-3 (**Electrochemistry**)
ST **solid electrolyte** battery; lithium titanium sulfide battery
IT Batteries, primary
(lithium-titanium sulfide, **solid-electrolyte**)
IT Lithium alloy, base
RL: PRP (Properties)
(anode, in **solid-electrolyte** battery with titanium sulfide)
IT 7439-93-2, uses and miscellaneous
RL: USES (Uses)
(anode, in **solid-electrolyte** battery with titanium sulfide)
IT 12039-13-3
RL: PRP (Properties)
(cathode, in **solid-electrolyte** battery with lithium)
IT 1314-23-4, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** containing **lithium oxide** and and sulfur and, for lithium-titanium sulfide battery)
IT **12057-24-8**, uses and miscellaneous
RL: USES (Uses)

(**solid electrolyte** containing **silica** and zirconia and, for lithium-titanium sulfide battery)

IT **7631-86-9**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from lanthanum and zirconium and, for lithium-titanium sulfide battery)

IT 15593-56-3
RL: PRP (Properties)
(**solid electrolyte** from lithium germanate and, for lithium-titanium sulfide battery)

IT **10377-52-3**
RL: PRP (Properties)
(**solid electrolyte** from lithium silicate and, for lithium-titanium sulfide battery)

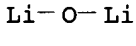
IT 12025-11-5
RL: PRP (Properties)
(**solid electrolyte** from lithium vanadate and, for lithium-titanium sulfide batteries)

IT 13453-84-4
RL: PRP (Properties)
(**solid electrolyte** from trilithium phosphate and, for lithium-titanium sulfide battery)

IT 12031-66-2
RL: PRP (Properties)
(**solid electrolyte**, for lithium-titanium sulfide battery)

IT **12057-24-8**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** containing **silica** and zirconia and, for lithium-titanium sulfide battery)

RN 12057-24-8 HCAPLUS
CN Lithium oxide (Li2O) (8CI, 9CI) (CA INDEX NAME)

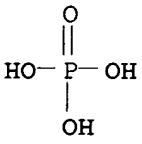


IT **7631-86-9**, uses and miscellaneous
RL: USES (Uses)
(**solid electrolyte** from lanthanum and zirconium and, for lithium-titanium sulfide battery)

RN 7631-86-9 HCAPLUS
CN Silica (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

IT **10377-52-3**
RL: PRP (Properties)
(**solid electrolyte** from lithium silicate and, for lithium-titanium sulfide battery)

RN 10377-52-3 HCAPLUS
CN Phosphoric acid, trilithium salt (8CI, 9CI) (CA INDEX NAME)



●3 Li

=>

=>